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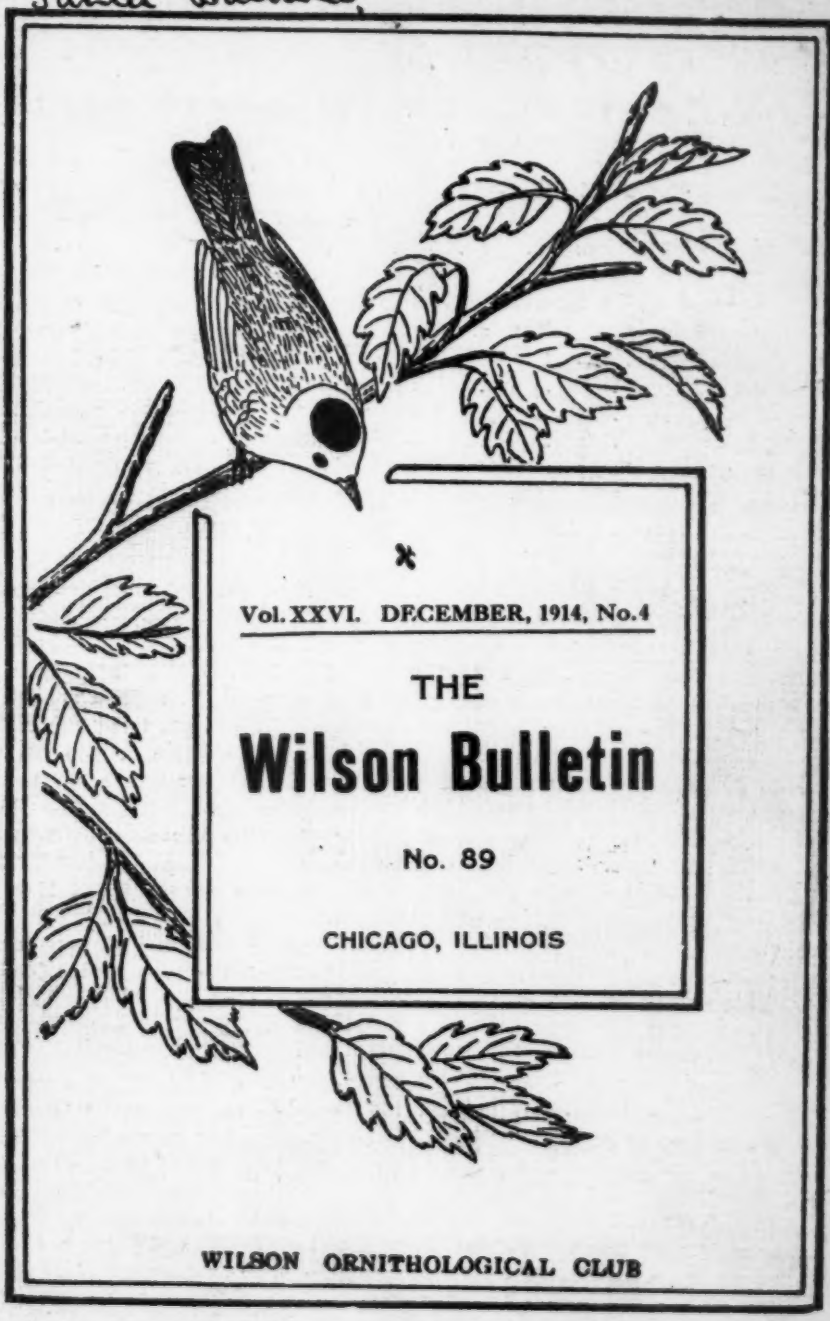

Vol. XXVI. DECEMBER, 1914, No. 4

THE

Wilson Bulletin

No. 89

CHICAGO, ILLINOIS

WILSON ORNITHOLOGICAL CLUB

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THE WILSON BULLETIN

is published on the fifteenth of March, June, September, and December, by the Wilson Ornithological Club at Chicago, Ill., edited by Lynds Jones, Oberlin, Ohio.

Subscription: One Dollar a year, including postage, *strictly in advance.* Single numbers, 30 cents, unless they are "Special" numbers, when a special price is fixed. The Bulletin, including all "Special" numbers, is sent to all paid up members, either Active or Associate, after their election, it being understood that one dollar out of the annual dues paid by members is for the Bulletin.

Subscriptions may be addressed to P. B. Coffin, 3232 Groveland Avenue, Chicago, Ill.

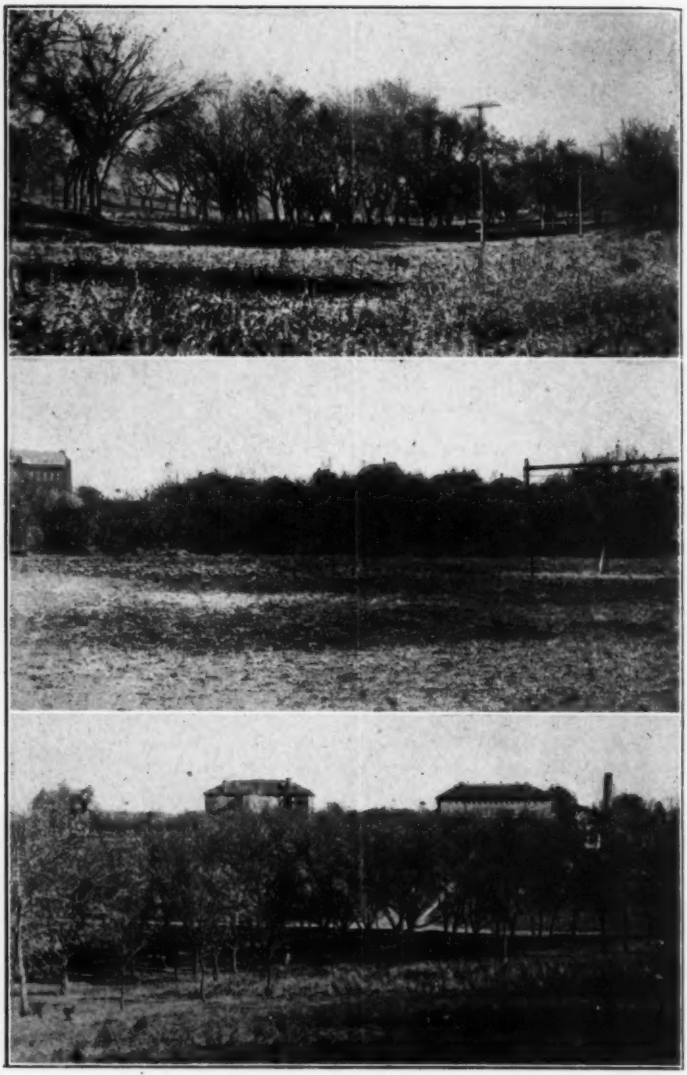
Advertisements should be addressed to The Wilson Bulletin, 943 Marquette Bldg., Chicago, Ill. Terms will made known upon application.

All articles and communications intended for publication, and all publications and books for review, should be addressed to Lynds Jones, Oberlin, Ohio.

Articles of general interest relating to bird life are solicited. They should be in the hands of the editor not later than the fifteenth of the month preceding publication.

Authors of articles, other than "Field Notes," or short items of a general nature, will receive 25 bound reprints free of charge. Additional bound reprints of articles comprising 16 pages or less may be had at the following rates: 25 additional copies, $1.50; 50 additional copies, $2.00; 75 additional copies, $2.50.

Entered as Second Class Matter, May 21, 1914, at the Postoffice at Chicago, Ill., under the Act of March 3, 1879.



THE SITE OF THE ROOST.

Upper, from the South-east. Middle, from the North-east.
Lower, from the West.

THE
WILSON BULLETIN
NO. 89.
A QUARTERLY JOURNAL OF ORNITHOLOGY
VOL. XXVI DECEMBER, 1914. NO. 4

OLD SERIES VOL. XXVI. NEW SERIES VOL. XXI.

NOTES ON A NORTHERN ROBIN ROOST.[1]

BY ARTHUR R. ABEL.

The Robin roost to be here described was located within the city limits of Sioux City, Iowa, in fact in a rather closely built up district of the city. The flight to the roost was first noticed about August 7, 1914, although no record was made at this time.

However, by the fifteenth the regularity of the flight had been noted and it was decided to determine its origin and destination. At this time the birds were flying in considerable numbers, from northeast to southwest, over Newton St. and the College Campus. On this evening the flight was watched on Newton St. from 7:15 to 7:28 when the flight practically ceased, and eighty-five birds had been counted.

On the evening of August 16th, the birds were first noticed at 6:50, and from this time to 7:30 110 birds flew over the route. By the thirtieth the numbers were considerably augmented, and I had planned to work over toward the northeast in hope of ascertaining how far they came.

Accordingly I left about six o'clock and went northeastward until I reached the ravines north of Morningside known as North Ravines. The country here was very hilly and the

[1] Read before The Sioux City Bird-Study Club, Nov. 3d, 1914.

flocks were seen first as they came over the ridge of the hills. I kept on going northeastward thinking that each hill concealed the ravines where the flocks formed. Each time however I was disappointed and was forced to go still farther on, until at last about dark I saw a few flocks fly out of a ravine about one and one-half miles from Newton St. This however did not prove to be the source of the supply for the next day about noon this ravine was deserted, proving that the flocks stopped only for a brief rest. On the same evening (the 30th.) we were surprised to find many kingbirds flying over the same route. The kingbirds, however, flew somewhat earlier than the Robins, although part of the time the flight was a mixed one. The last of the flight consisted entirely of robins, which flew until it became dark.

The Robins flew faster and with more rapid wingbeats than the Kingbirds. The observations of this evening made clear that the flocks gathered over a very large territory, and were formed by additions from the many ravines east of town. A word of explanation might be made as to the use of the term "flocks" in this connection. At the best time of the flight the birds came stringing in almost continuously, sometimes singly or in pairs, and sometimes in groups of from ten to twenty; often it required alertness to keep the count correctly. On the evening of the thirtieth, at a point about two miles west of where the roost was subsequently found, I counted 226 robins and 93 kingbirds.

On the next evening I went in the opposite direction, and found at some distance southwest of the college, the robins were flying in a direction reverse to that of the night before; this suggested that the roost might be nearer to the college.

On the evening of Sept. 1st, the roost was located in a small wooded hollow adjoining the athletic field. The central clump was composed of about fifty rather tall box-elder trees, pretty well crowded together so that the foliage was dense enough and high enough to afford protection and shelter. To the north there were a good many scattered trees, but on the east there was a large open space occupied by the athletic field,

which afforded an excellent place for counting. To the southeast there were a good many trees but they seemed to disregard them and fly directly over. At 6:27 p. m. most of the birds had congregated, and a few Kingbirds were also seen among the robins.

On the evening of Sept. 2, the roost was visited at 6:30 and only four Robins were counted in the trees. The first birds to fly in from the east came at 6:43 and from this on they came in from the east with rapidity until 7:30 when it became too dark to see or count them. By this time we had counted 302 Robins entering the roost from the north and east.

TERRITORY WHERE THE FLOCKS GATHERED.

Typical ravine in which Robins feed during the day.

The Kingbirds had vanished—none were to be seen, although a single one was seen in the roost early the next morning. The cold night of Sept. 1st, had probably been too much for them. It was decided to visit the roost early the next morning in order to see how it would break up. So at 3:45 A. M. we were on the ground, but everything was so quiet and dark and cold that we sought shelter. Returning at 4:55, we heard the first Robin chirp at 5:05. At 5:10 several flew silently from outside trees to the main roost. At 5:15 we

could say that morning had dawned, and a chorus of chirps and calls began which did not quiet down until the roost had been vacated. At 5:21 the first bird flew out. At 5:22 the calling became much louder, and we heard the call which can be best expressed by "whe-ap." At 5:25 the disturbance became quite general and there was considerable uproar, and much flying about among the trees.

At intervals about twenty-one mourning doves flew from outside trees and the main roost. At 5:20 a Blue Jay called and was answered two or three times by other Blue Jays; this seemed to stir the Robins up a little, and they began to leave in large numbers. Among other birds heard in and about the roost at this time might be mentioned the Baltimore Oriole, several Goldfinches, a Downy Woodpecker, and several Chickadees; while on Sept. 24th, about 100 Blue-birds rested there over night. At 5:45 about a hundred Chimney Swifts appeared, probably coming from a large chimney of a nearby schoolbuilding. By 6:50 the roost was practically deserted except for two or three Robins which had been stunned by flying into telephone wires. The great majority of the Robins on leaving the roost, flew out a short distance, alighting in other trees or on wires, where they seemed to take a brief rest before proceeding to the feeding grounds. On the way from the roost the Robins were seen on all sides, on the College Campus, in private yards; many were on the ground feeding, others were perched in trees and on the roofs of houses. No doubt the birds gradually dispersed to the outer limits of their feeding range, for by ten o'clock they had disappeared from the immediate neighborhood.

On Sept. 4th, an effort was made to count the Robins arriving from the south, as well as from the north; at this time 362 birds were counted, in a similar manner 558 were counted on the evening of the eighth.

On Sept. 9th, a heavy rain fell throughout the day, in fact it was said to be the heaviest rain in sixteen years; darkness settled rather early in consequence of the cloudiness. Although watching under these circumstances was uncom-

fortable it seemed advisable to ascertain what effect the weather conditions would have upon the flight. The first Robin flew into the roost at 5:47; they now followed regularly at intervals of two or three minutes, at 6:06 thirty birds flew in. The watch was now discontinued, as it seemed that the only noticeable change was that the flight started fifteen or twenty minutes earlier than usual. But as there was no cessation in the steady and almost uniform downpour this is attributed to the earlier twilight.

It was thought desirable to attempt a complete census of the birds arriving from all directions. Accordingly on the evening of Sept. 11, a number of members of the Sioux City Bird Study Club visited the roost and assisted in the counting. It was thought that all the birds could be observed by establishing three stations, as follows: the writer undertook to watch the flight from the west; the southeast quadrant was watched by Dr. Stephens and Mr. Fields; and the northeast quadrant was watched by Mrs. Fields and Miss Hood. Altogether 761 Robins were counted as they entered the roost from all directions.

The following table shows the only complete census that we made:

Time	West	Northeast	Southeast	Total
6:04		2		2
6:08		2		2
6:15	3	2		5
6:16			2	2
6:17	5		5	10
6:18		1	1	2
6:19		2	2	4
6:20		16	1	17
6:21		6		6
6:22		19	1	20
6:23		2		2
6:24		7		7
6:25		3		3
6:26		15		15
6:27		2		2
6:28		4		4

Time	West	Northeast	Southeast	Total
6:29		7		7
6:30	1	24		25
6:31		3		3
6:32	6	27		33
6:33		18		18
6:34	1	8	11	20
6:35	1	2	4	7
6:36		4		4
6:37		45		45
6:38		46	21	67
6:40		17	31	48
6:41		21	28	49
6:42		4	25	29
6:43	1	7	23	31
6:44		10	28	38
6:45		9	11	20
6:46	4	32	20	56
6:47	2	24	19	45
6:48		12	16	28
6:49		3		3
6:50		9		9
6:51		6	7	13
6:52		9		9
6:53		10	3	13
6:54		9		9
6:55	3	3	4	10
6:56			1	1
6:58		8		8
6:59		2		2
7:03		1	2	3
7:05			1	1
7:06		2		2
7:09		1	1	2
				Total....761

It is believed that this count is approximately correct, i.e., probably not more than a hundred birds were missed in the counting. Of course to one who is witnessing the flight, without attempting to make a count, there would probably come temptation to estimate them by the "thousands"; a flock of even several hundred birds presents quite an imposing array.

From this time observations were made only on the Northeast quadrant, and there seemed to be a very rapid decrease in numbers. Since a complete census was not attempted later it will probably be best not to give any incomplete figures. Suffice it to say that the observations were made every three or four days until the middle of October. After Sept. 27 there were only scattered individuals; and on Oct. 16 none flew in from any direction.

It seems to be a regular habit of Robins to roost in immense flocks in their winter homes in the south, and there are numerous published accounts of the wanton slaughter of them under such circumstances. But if it is their habit to roost thus at the close of their breeding in the north, before the fall migration, it does not seem to be very generally recognized.

Mr. Wm. Brewster publishel nearly twenty-five years ago,[1] a most admirable account of several "Summer Robin Roosts" near Cambridge. His observations on the behavior of the birds were so complete that little can now be said in addition. The present paper must be largely in the nature of a confirmation.

Our observations agree in that the flight was not equal in all directions, and that various other species of birds, in small numbers, often became associated with the Robins in the roost.

Mr. Brewster also discusses the matter of the composition of the roost as to the sex, and gives some reasons for thinking that the summer roosts are made up of the males and young of the first broods of the year. Fisher[2] also expresses his belief that the fall roosts of the Barn and Bank swallows consisted of males. I have been unable to make any positive observations on this point; but, in as far as the lighter color of the breast is indicative of sex, I should incline to the opinion that the roost under my observation contained a fair proportion of females.

The manner of flight to the roost seems to be distinctive in

[1] The Auk, 7, 1890, pp. 360-373.

[2] The Observer, 7, 1896, pp. 382-384.

some birds. Dr. Jones[1] found that the Grackles formed in rather definite and compact hosts, even remaining together while feeding during the day. It is not this way with the Robins. Their flight is more like a continuous stream, now broad enough to fill a considerable segment of the horizon, now narrowed to a single individual; sometimes even ceasing temporarily.

As would be supposed the birds flew close to the ground on dark cloudy days and much higher on clear sunlight evenings.

The birds seemed guided in flying by the conditions of light and if the darkness came earlier the flight was correspondingly early. The height of the flight lowered as darkness came on so that at dusk the Robins were skimming along close to the ground swerving from side to side in avoiding the numerous obstacles. When flying high the birds maintained about the same level until directly over the roost then darting down with set wings to the topmost branches where they hesitated a minute or two before diving down into the depths of the foliage. The first arrivals seemingly realizing that they were early occasionally went off to the nearby alfalfa and corn fields to feed, returning about dusk to roost. Then for a few minutes a squabble usually took place as they selected and fought over their roosting places.

Soon only a few individuals were heard as they uttered their plaintive calls; but in a short time this also died away and no sign remained to tell of the large number of birds so near.

Further notes were made on the habits and behavior, but these details have already been fully described in Mr. Brewster's paper, which the reader will find to be a most entertaining account.

Sioux City, Iowa

[1] Wils. Bull., 9, 1897, pp. 39-56.

THE BIRDS OF THE DOUGLAS LAKE REGION

BY JAS. S. COMPTON.

The Biological Station of the University of Michigan is located on Douglas Lake in the western part of Cheyboygan County, Michigan, in a district almost equidistant from the Straits of Mackinac, and the Great Lakes, Huron and Michigan. The data upon which this paper is based were gathered by the writer while in residence at the Station during the summers of 1913 and 1914. The session at the Station like that of the university of which it is a part covers a period of eight weeks beginning the last of June. The weather conditions, then, are those of midsummer in the region of the upper Great Lakes.

The region about Douglas Lake has a remarkable geological history, most of it at one time or another during the Glacial Epoch having been moraines, outwash aprons, lake beach, lake bottom, lake dune, or two or more of these different deposits, an outwash apron at one time furnishing the materials to build a lake beach, and it a little later in turn the sand for a dune.[1] The soil is sandy; much of it has little in it besides well worn grains of quartz; in some places especially on the higher levels where least washing by wave action has taken place there is much gravel and a little clay and loam. So far as permanent human settlements are concerned most of the region is still wilderness, the barren sand having little attraction for even the most land-hungry. Conditions of life for man and beast and bird are decidedly primitive.

A generation or less ago the land was heavily forested with white and red pine, hemlock, spruce, hard maple, beech, birch, white cedar, balsam, tamarack, swamp maple and black ash, but now little of the original growth remains. In only one place within a radius of three miles of the Station can the primeval conifer-hardwood forest be seen untouched by forest fire or the ax of the lumberman. This oasis is Fairy Island in Douglas Lake, an exception to the rule because of its isolated

[1] Summary of Surface Geology of Michigan. Alfred C. Lane. 1908.

position. Two tracts of cut-over hardwoods lie within a mile of the Station, a typical cedar bog two miles distant on the north shore of Burt Lake, and all about and between are the sand hills and plains covered with aspens.

The cut-over hardwoods are a vast brush-heap laid and ready for the match. Tree-tops in varying stages of dissolution cover the ground lying as the lumberman left them when he withdrew; the few trees that he failed to cut down, the saplings and second growth that have since sprung up, project above but scarcely conceal the debris. So numerous are the fallen trunks and so dense the foliage of the shrubby growth that one may sometimes walk for rods upon them without so much as a glimpse of the earth beneath him. Under this leafy jungle where the midsummer sunlight seldom falls is a thick layer of humus and wood in all stages of decay inhabited by hordes of lowly creatures, ants, worms, snails, beetles, and larvae of many insects. Here in July and August are plenty of berries, especially of the red-berried elder and the red raspberry fruiting wherever they can find a place to grow. It would be difficult to find conditions of food and shelter more acceptable to the forest avifauna than are afforded by these cut-over hardwoods.

The large bog on Burt Lake to which reference has been made may well serve as a type of the bogs of the region as there are a number of smaller ones partly filled with vegetation and sand washed down from the adjacent higher land. This bog, known locally as Reese's Bog, has evidently been formed by dune or wave action that resulted in the cutting off of a large shallow arm of the lake; the quiet bay thus formed became filled with vegetation, each generation of plants at its death laying the foundation on which the next was to grow. Underfoot now is a water-soaked carpet of Sphagnum and other mosses, sundews, orchids, and other water-loving plants into which the foot sinks to shoe-top; overhead the trees meet in a tangle of twigs, white cedars, balsams, spruces, and larch, with here and there a swamp maple, a white birch or a black ash. The competition for sunlight

is very keen; most all of the survivors are dead in their lower limbs and are soon adorned for the funeral by a vigorous colony of lichens, both of the crustaceous and filamentous kinds. Only in a few places in the old logging roads does the sunshine fall without obstruction even at noon; in such favored places there is a vigorous growth of vegetation of many species, more than two hundred having been officially identified by the botanists of the Station. Numerous minute pools of water in the moss, and several brooks flowing a few inches below the surface tell us that water is never very far away, and suggest that perhaps Burt Lake has never quite given up the struggle for this part of his ancient domain.

The aspens are the pioneers of the drier lands. They enter upon the scene early, tame the sand down a little and hold it in their possession till the more dominant types appear, fighting always a losing fight in which it is foreordained that they go under unless some outside force interrupts the orderly march of events and starts the plant succession back near the beginning. The outside force that has intervened in this instance is the forest fire which has swept away practically all of the splendid mixed pine and hardwood forest that once covered these sandy stretches. Fire after fire has swept through this aspen territory till now in a few localities it is nearly as bare of vegetation, other than mosses and lichens, as it was the day the sullen waters of the glacial lake retreated from it for the last time. Among the aspens grow the white birch, red oak, pine, and a number of berry-bearing plants such as the blackberry, huckleberry, two kinds of blueberries, the pin cherry and the wintergreen.

The habitats discussed in this paper are the three that have been described at some length in the foregoing pages.

The tent which the writer lived in during the period mentioned was located on the beach of Douglas Lake; obviously the opportunities for observation were best in this habitat; furthermore the lake was rimmed by a growth of pines that stood just where the beach and the aspens meet. There was very little marsh or swamp in the region; if we use the term

swamp, for instance to designate a tract of wet land grown up with reeds and coarse grasses, cattails, etc., but without any conspicuous woody shrubs or trees as is the case with the bog.

These habitats are of interest only in their relation to the birds living in them. Some species show decided preferences for one plant association: the golden-crowned kinglet found only in the cedar bog, the junco only in the aspens; others like the hermit thrush were more generally distributed, being found in the bog, hardwoods, and aspens alike. At the end of June there is quite a large bird population in the aspens, but by the middle of August it is very much reduced both in numbers of individuals and of species observed. A half day's jaunt in the aspens the forenoon of July 8 gave me a list of 23 species; two days before a similar trip in the hardwoods gave 41 species. On August 7 the number seen on a sunny forenoon's trip was 6 species; the next forenoon in the hardwoods my list was 46 species.

In the list which follows will be found the English names of the species, the habitat preference of each species, the frequency, the abundance, and nesting data where any were gathered. Frequency and abundance as here used need a word of explanation. The former term refers to the comparative frequency with which the species, not the individual, was seen; in this connection I have used three degrees as follows: r or rare=seen from 1 to 4 times; c or common=seen from 5 to 20 times; a or abundant=seen more than 20 times. Abundance, on the other hand, applies to the total numbers of individuals of the different species seen during a given period; in this case the period covers from June 30 to August 7, stopping before the fall migration gets any headway to disturb our study of midsummer birds. (1) under abundance means that this species stands highest in number of individual birds seen, 227 in our study; at the other end of the scale of abundance (47) means that only 1 bird of this species was identified. With this explanation it will not be difficult to interpret the data:

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Bluebird		(38)	c.	cultivated areas
Robin, young		(17)	a.	all habitats
Hermit thrush, 9 nests		(9)	a.	all habitats
Olive-backed thrush, 1 nest		(41)	r.	hardwoods
Wood thrush		(47)	r.	bog
Wilson thrush		(46)	r.	hardwoods
Blue-gray gnatcatcher		(46)	r.	bog
Golden-crowned kinglet		(39)	c.	bog
Chickadee, young		(21)	c.	all habitats
Red-breasted nuthatch		(46)	r.	bog
White-breasted nuthatch		(22)	a.	bog and hardwoods
Brown creeper		(47)	r.	hardwoods
Winter wren		(23)	c.	hardwoods and bog
House wren, 1 nest		(30)	c.	cultivated areas
Brown thrasher, 1 nest and young		(26)	c.	hardwoods and aspens
Catbird		(42)	c.	hardwoods and aspens
Redstart, 2 nests		(14)	a.	hardwoods and aspens
Canadian warbler, nest ?		(43)	r.	hardwoods and aspens
Maryland Yellow-throat, nest ?		(32)	c.	hardwoods and beach
Mourning warbler, nest ?		(46)	r.	hardwoods and beach
Ovenbird, 1 nest		(11)	c.	hardwoods and aspens
Pine warbler, nest ?		(34)	c.	beach (pines)
Black-thr green warbler, young		(29)	c.	hardwoods and bog
Blackburnian warbler, 1 nest and y		(44)	r.	hardwoods and bog
Black-throated blue warbler		(40)	r.	hardwoods
Blackpoll warbler, young		(46)	r.	hardwoods
Tennessee warbler		(46)	r.	hardwoods
Chestnut-sided warbler, 3 nests		(21)	c.	hardwoods
Myrtle warbler		(46)	r.	beach (pines)
Yellow warbler		(46)	r.	cultivated areas
Nashville warbler		(46)	r.	hardwood
Black-and-white warbler, nest ?		(34)	c.	hardwood and bog
Blue-headed vireo		(45)	r.	hardwoods
Yellow-throated vireo		(46)	r.	hardwoods
Red-eyed vireo, 1 nest and young		(5)	a.	hwd, bog and aspens
Cedar Waxwing, 1 nest and young		(1)	a.	all habitats
Tree swallow, young		(28)	c.	beach and open water
Barn swallow, young		(45)	r.	cultivated area
Purple martin		(46)	r.	cultivated area
Bank swallow		(44)	r.	beach and open water
Cliff swallow, young		(32)	c.	cultivated area
Scarlet tanager, 1 nest		(36)	c.	hardwoods
Indigo bunting, 1 nest		(23)	c.	hardwoods and aspens
Rose-breasted grosbeak		(44)	r.	hardwoods
Towhee, 4 nests		(4)	a.	all habitats
Goldfinch, nest ?		(7)	a.	all habitats
Purple finch		(39)	c.	beach
Junco, 1 nest		(15)	a.	aspens
Song sparrow, 2 nests and young		(2)	a.	beach and hardwoods
Swamp sparrow		(46)	r.	beach
Field sparrow		(47)	r.	hardwoods
Chipping sparrow, 2 nests and young		(13)	a.	hardwoods and aspens
White-throated sparrow, young		(18)	a.	hardwoods and bog
Lincoln's sparrow, young		(45)	r.	hardwoods

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Savanna sparrow		(45)	r.	aspens
Vesper sparrow, 4 nests and young.		(8)	a.	aspens
English sparrow, young		(20)	c.	cultivated areas
Bronzed grackle		(46)	r.	beach
Meadowlark		(38)	r.	cultivated areas
Red-winged blackbird, young		(42)	c.	beach
Cowbird, young		(24)	c.	all habitats
Bobolink, young		(43)	r.	cultivated areas
Crow, young		(3)	a.	all habitats
Blue jay		(26)	c.	bog
Prairie horned lark, young		(43)	r.	cultivated areas
Least flycatcher		(45)	r.	hardwoods
Acadian flycatcher		(46)	r.	hardwoods
Olive-sided flycatcher		(46)	r.	hardwoods
Wood pewee, 1 nest		(19)	a.	hardwoods and aspens
Phœbe, 2 nests		(43)	c.	cultivated areas
Crested flycatcher		(47)	r.	hardwoods
Kingbird, young		(15)	a.	all habitats
Hummingbird, 1 nest		(42)	c.	all habitats
Chimney swift		(26)	a.	all habitats
Nighthawk		(10)	a.	all habitats
Whippoorwill, 2 nests		(12)	a.	aspens
Northern flicker, 1 nest		(14)	a.	all habitats
Red-headed woodpecker, 1 nest & y		(42)	c.	hardwoods
Yellow-bellied sapsucker, young		(20)	a.	hardwoods
Downy woodpecker, young		(25)	a.	all habitats
Hairy woodpecker		(36)	c.	hardwoods
Belted kingfisher		(16)	a.	beach
Black-billed cuckoo		(44)	r.	hardwoods
Screech owl		(47)	r.	hardwoods
Barred owl		(46)	r.	hardwoods
Short-eared owl		(47)	r.	hardwoods
Osprey		(46)	r.	beach and open water
Marsh hawk		(42)	c.	aspens
Cooper's hawk		(46)	r.	hardwoods
Sharp-shinned hawk		(46)	r.	hardwoods
Broad-winged hawk		(47)	r.	hardwoods
Sparrow hawk		(45)	r.	hardwoods and aspens
Rose-breasted Grosbeak, young		(44)	r.	bog
Bald eagle		(43)	r.	beach
Mourning dove		(46)	r.	beach and aspens
Ruffed grouse, young		(20)	a.	hardwoods and aspens
Quail		(46)	r.	cultivated areas
Killdeer, young		(23)	c.	beach
Spotted sandpiper, 1 nest and y		(6)	a.	beach
Solitary sandpiper		(46)	r.	beach
Virginia rail, 1 nest		(46)	r.	beach and swamp
Great blue heron		(43)	c.	beach
Blue-winged teal		(46)	r.	beach and open water
Wood duck		(47)	r.	beach and open water
Red-breasted merganser, young		(17)	c.	beach and open water
Bittern		(47)	r.	beach and open water
Buffle-head duck		(37)	c.	beach and open water

Name of Bird	Nests or Young	Abundance	Frequency	Habitat
Common tern		(46)	r.	beach and open water
Caspian tern		(33)	c.	beach and open water
Pied-billed grebe		(47)	r.	beach and open water
Loon, young		(28)	c.	beach and open water

Only such nests as were found actually occupied by the birds are recorded as "nests," the accompanying numeral indicating the number belonging to that particular species. The word "young" is used to indicate that young of the species were observed outside of the parental nest. "Nest?" is used to designate a probable nest, probability being based on seeing the parent bird with a larva in its beak, at the same time showing great concern over the approach of the writer.

12 of the species on the list show a decided preference for the society of man, for his houses, barns, cultivated lands and the like. With the 11 native birds this preference is doubtless acquired recently in a biological sense, the other, the English sparrow has doubtless had this preference for a long period of time even as biologists reckon it. They are the bluebird, house wren, yellow warbler, barn swallow, purple martin, cliff swallow, meadowlark, bobolink, prairie horned lark, phoebe, and quail; these all rank low in the scale of abundance, the house wren (30) being most abundant, the average for the 11 about 41.

The habitats most characteristic of the wilderness are the bog and the aspens, of our list 6 belong to the former and 5 to the latter; it will be noted that together they equal the number of native species showing a preference for human society. The vesper sparrow has an abundance of (8) and the whippoorwill (12), but the others rank much like the birds of the preceding paragraph.

35 species showed no decided preference of any kind, but were quite generally distributed thruout the territory. To this group belong the cedar waxwing (1), song sparrow (2), crow (3), and towhee (4). Of the chewink or towhee Barrows says: "It is far from common about Little Traverse in Emmett County."[1] It is only two miles to the Emmett-

[1] Michigan Bird Life, W. B. Barrows, 1912, page 526.

Cheyboygan county-line from the Station and only twenty to the Little Traverse Bay at Bay View.

Of the 25 listed as belonging to the "beach" or to "the beach and open water" only 14 will probably be called water birds. Of these the spotted sandpiper has an abundance of (6) and the red-breasted merganser (17), while the others rank rather low, from (28) to the lowest of all (47). Possibly Douglas Lake is too small to compete successfully with the larger lakes, Burt, Mullet, Huron and Michigan, none of which is more than 20 miles away, for the favor of the gulls and terns, and possessed of too little swamp to compete with Indian and Crooked Rivers for the favor of the coots and bitterns. Two trips were made to these rivers and on each of them large numbers of swamp birds were seen, but they are too far from the Station to be visited regularly; for this reason the records are unavailable for our purpose.

A HERMIT THRUSH STUDY.

BY CORDELIA J. STANWOOD.

A hill wooded with gray birches and evergreens slopes down to a peat bog. Just above the swale grows the painted trillium that carries at its snowy heart the symbol of the Trinity in royal purple. One morning as I plucked a handful of these dainty blooms, I flushed a brooding Hermit from her eggs. A small fir shaded the nest. The three green-blue eggs made a charming bit of color against the dull orange lining of pine needles.

Twelve days later I visited the nest again. The woods were now sweet with linnea and three fascinating little Thrushes, about seven days old, welcomed me with a wide expanse of golden throat. The young birds had beautiful, large eyes; the natal down was conspicuous at the close of the quill stage; and the tips of the olive and buffy feathers were just beginning to show beyond the quill casings.

I was anxious to try an experiment with tame Thrushes,

TAME HERMIT THRUSHES.

PHOTO BY CORDELIA J. STANWOOD

so I carried the little birds home. The journey to my home did not disturb them in the least. They ate bountifully of bread and milk from a little gold-lined, silver spoon, took a few drops of water and slept the greater part of the day with their heads straight in front of them.

After the first day, I varied their diet with earthworms, ants' eggs, steak, wild pears, strawberries, a spider, or a fly occasionally, and a grasshopper when I was able to find it.

Until the morning of the fourth day the Hermits remained as distinctly inside the small nest as if an invisible wall separated them from all else. They grew rapidly, ate well, preened vigorously, scratched their ears with their toes, and although the nest was quite deep, voided all excrement without it, sometimes standing on the edge of the nest to do so.

In the middle of the morning of the fourth day, they slowly and cautiously stole forth from the nest, one at a time, just as they do in the wild woods. From that moment they insisted on flying and perching and refused to snuggle down anywhere.

During the eleven days that followed, I carried the birds to the woods for part of each day, or the entire day and let them run wild. At night I took them in and they perched at dark in the balsam boughs that I placed for them over a door. At first I remained near them all the time that they were in the woods, and fed them as they came for food. Later I put them out early in the morning, and went and fed them as often as once in two hours.

The first afternoon in the woods, I saw one Hermit take a sunbath with his feathers all fluffed out, one pick up a small brown caterpillar, and another several mouthfuls of earth.

The moment that I put the Thrushes down near a shallow pool below the spring, and rippled the water with my hand, the birds entered the pool, drank, and splashed the water all over themselves. These irresistible, immature birds, going to the water so slowly, cautiously, and surely, and bathing after the exact patterns handed down to them made an awesome as well as a pretty picture.

Between feeding times when the birds were not seeking food for themselves, they liked to snuggle down on the pine needles under low firs, or among dead leaves and sticks in hollows, or to perch on dead branches or stumps. The Thrushes resembled their surroundings so closely that I was in constant fear lest I should step on one. I always examined the ground carefully before advancing a step.

When in the woods, the birds kept in touch by a very sweet, low call that sounded like *phee*. A bird became uneasy at once if he lost his mates. I heard them call *peep* frequently, and also *chuck* once. One day when I covered a little bird in a basket to take him to the studio, he gave the pitiful call that the parents give when concerned for the safety of the young in the nest, a call that sounds like a *deep sigh*.

Even after the young had been in the woods for several days, they would have suffered for food and water without my constant care. I found that it was necessary to select a new feeding place for them where they must find water, and where they could not avoid the wild birds that came to drink and bathe.

When the Hermits were about fifteen days old, they awoke me one morning, calling for food. I fed them and returned to my room. When one became hungry again, he perched on the molding of the door through which I disappeared and called until I came and fed him.

When seventeen days old, the Thrushes were able to pick up anything from the floor such as ants, ant's eggs, flying ants, small spiders, and the like.

Often tame young birds will follow voices, and fly up onto a stranger and beg for food instead of helping themselves. To counteract this tendency in my Thrushes, I never exhibited them to company at home, I never took visitors to see them in the woods, I never called them save at the feeding place, I never answered their welcoming peeps until I arrived at the feeding tree. Although I loved them dearly, I never petted or coddled them. And I never spared myself any exertion that would add to their health, comfort, or safety.

PAINTED TRILLIUM.

In the environment of the Hermit Thrush.

PHOTO BY CORDELIA J. STANWOOD

When the Thrushes came to feed, they liked to perch on my arms, head, or fly into my lap. They disliked being held across the wings, and strenuously resisted being caught. Every day they became more swift in their movements, more sensitive to sounds, and less dependent on the food supply that I brought to them.

I saw them pick up brown and green caterpillars, moths, and ants, besides such food as I left on the ground for them as spruce bud moths, grasshoppers, earthworms, ants' eggs, wild pears and wild strawberries.

A few days later, after I began to leave the Thrushes out nights, there came a severe rain storm. I was able to visit the Thrushes but twice that day. I found them dry save the tips of their tail feathers and not very hungry. The following day I carried food to them three times. On one of these trips, a little Thrush came to meet me, dripping from his bath in the spring. Although the feeding tree was not more than six yards from the wire fence that separated the woods from the open pasture and the spring, I never knew the Thrushes to come through the wire fence when anyone was at the spring.

They now ate so rapidly that it was awkward for them to open their mouths sufficiently to take steak from the scissors, and there was danger of cutting their mouths or throats. A mouthful or two sufficed and they darted away. They were also extremely quiet and started and listened at every sound.

The Thrushes were so well able to care for themselves that it seemed needlessly cruel to toll them to a certain spot with food where animals of prey might lie in wait for them. My frequent visits, also, kept them from their kind. Their parents drank and bathed at this same spring. I did not visit the feeding spot again. I never saw or heard of the Thrushes again.

I have lived with several Thrush families and I do not hesitate to affirm that this experiment might not have been so successful with all of them. Most young Thrushes when tamed, particularly when excessively petted, loose all instinct

for caring for themselves; they are little fool birds. However, Thrush character varies; it is as beautiful and flexible as the bird's wonderful voice. While nearly all Thrushes are extremely gentle and affectionate, I must confess that the only bird that ever dealt me a blinding blow in the eyes with his wings, when I accidentally startled the young from the nest was an extremely beautiful specimen of the Hermit Thrush. In one family I have found one helpless little bird that insisted on sitting in my note book all the time, with two that resented too much attention.

June 15, 1912, I found a Hermit Thrush incubating three eggs.

June 26, the young Hermit Thrushes were seven days old; it was the end of the quill stage; I took the young Thrushes to study.

June 29, the young Hermits left the nest.

June 30–July 10, the young Thrushes spent part or all of each day in the woods learning to feed. They perched in fir boughs in the house at night.

July 10–July 15, I freed the Thrushes entirely and fed them what was necessary.

July 15, the Thrushes appeared to be in an almost natural state. They were entirely competent to care for themselves.

A BRIEF STUDY OF THE NEST LIFE OF THE BLACK-THROATED GREEN WARBLER.

BY CORDELIA J. STANWOOD.

Beside a shady path that marked the course of a neglected woodroad, a pair of Black-throated Green Warblers constructed a nest, near the tip of a branch of a large spruce tree, but three and one-half feet above the ground. It is not very often that the Black-throated Green Warbler provides the student with such an excellent opportunity for studying her nest. Usually these birds build at a greater elevation.

This spruce stood in a clump of firs that bordered an open space in the woods.

There was just room enough among the trees to erect a small balsam blind. When it was completed, my face was about a yard from the nest, and it was so dusky in the tent, that there was little fear of the birds becoming aware of my presence, save when I moved.

As usual, the nest was a dainty-looking, soft, strong, warm cradle. Fine spruce twigs, curls of birch bark, bits of dead wood, secured and cemented together with spiders' silk, gave the substantial foundation. The lining consisted of plant down similar to that of the cinnamon fern, a few threads of black plant fibre, and a few of the dull, orange setae of some moss such as *dicranum* pulled before they were ripe. The nest was just large enough to accomodate four, plump, hungry, sleepy, little Warblers.

Hidden in the blind, I saw the mother bird brood the young, cleanse the nest by burrowing under the young, and carry away the excrement. The diet of the young consisted of brown, white, gray moths, a fly-like insect, a bee-like insect, a small beetle similar to the larder beetle, and a large number of smooth caterpillars, both green and brown. Sometimes the mother bird fed three brown or three green caterpillars to one nestling at a time. Often besides the insect that I was able to distinguish, was a mass of other insect food that I was unable to place. Usually each bird fed several nestlings at each feeding but not more than three at one feeding.

The first day after the tent was constructed, I observed three hours in the afternoon—from 12:37 to 3:05 p. m. A bird came a dozen minutes after I entered the blind. During that time, the male fed the young nine times, and carried away the excrement three times; the female fed the young nine times; one visit was made by a bird whose sex I did not determine; the rate of feeding the young was once in nine and one-half minutes; during my stay, I saw a few of the insects fed to the young; among them were seven smooth, green caterpillars, two brown moths, and three gray

moths; when the female fed the young she twittered *sint, sint, sint.*

At this stage the young twittered faintly when the birds came, gave a vigorous food reaction, preened a great deal and yawned. They had yellow beaks, brownish at the tip, throats lined with red, greenish-grey upper parts, wings darker than the back, two buffy-yellow wing-bars, buffy-yellow underparts, and almost invisible streaks on the breast. Most of the time the young rested their beaks on the rim of the nest, at other times they raised them at an angle of 60°.

The parent birds had formed a habit of walking out the branch to the west side of the nest, but when both birds came at the same time, the male sometimes came to the north side of the nest and the female to the east.

The following morning I was present at the blind from 7 a. m. to 11:11 a. m.—four hours and eleven minutes. During this time the parent birds fed the young once in seven and one-half minutes. The male brought food thirteen times, and the female sixteen times. On the bill of fare I saw one fly-like insect, one bee-like insect, one beetle similar to the larder beetle, ten smooth green caterpillars, eleven smooth brown caterpillars, one white moth and three brown moths. The morning was very wet and foggy. The young are more hungry at this time of day, and usually more caterpillars and fewer moths are served, I suppose on account of the dampness.

The eyes of the young looked intelligent; one called when the parent left the nest; they all snuggled down in the nest when I moved in the blind.

In the evening I spent an hour in the blind. At 7:25 the female fed the young. I remained in the blind until 8 P. M. It was so dark in that part of the woods that the nest ceased to be visible. I saw nothing more of the parent birds.

Two days later the young were still in the nest in the morning. At noon the little grove was deserted and the nest of the Black-throated Green Warbler was "To Let."

THE DETERMINATION OF THE FOOD OF NESTLING BIRDS.

BY ALVIN R. CAHN.

I note with interest the discussion regarding the relative value of field observations and laboratory examinations in the determination of the food of nestling birds, and beg leave as an "outsider" to say a word on the subject, and to offer a suggestion. The controversy, in a word, seems to be: Are field observations of the food of nestling birds of any

HOUSE WREN WITH FOOD FOR YOUNG.
PHOTO BY A. R. CAHN

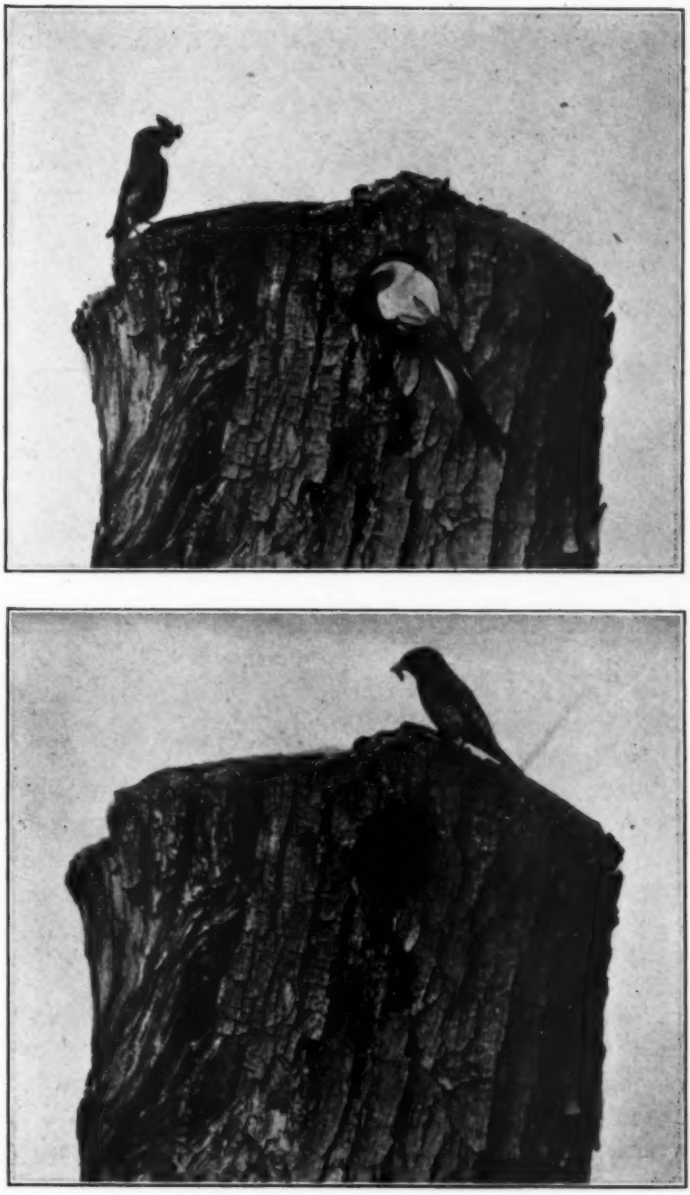
value as compared with the laboratory examination of stomach contents?[1] My answer to this question would be that

[1] W. L. M., Auk XXXI, July, 1914, pp. 420-421 vs. T. C. Stephens, Wilson Bul., XXIV, Sept., 1914, pp. 157-161.

each method serves its own end, and that neither can to any extent supplant the other; that there are at least *two* big problems in connection with the food of birds: the determination of the specific food, and the amount of food eaten, and each problem demands a different method of solution.

Laboratory examination of the stomach contents yields at best a list of specific material which chanced to be in the process of digestion at the time the fledgeling was killed—a list of species which, as W. L. M. states, requires an accomplished entomologist to compile. Given the tarsus of a beetle, it would indeed require an expert systematic entomologist to place that appendage in the proper family, genus and species to which its owner belonged. And with the very many species of beetles which abound in nearly every habitat, it would probably require a specialist in Coleoptera to perform the task to the satisfaction of the exacting scientific world. In a similar way it would require a specialist in Lepidoptera to ascertain with any degree of certainty the species of moth or butterfly to which a head, a particle of wing, or an isolated leg belonged. The great advantage of stomach examinations is the determination of *specific* animals eaten, and unless this is exact, the value of the method as a means of determining the food of the bird is minimized.

Field observations, on the other hand, should yield data on the amount rather than on the species eaten. It is no difficult matter to watch the feeding of nestlings, whether the neighborly warbler and sparrow, or the hawk nesting on the face of a perpendicular cliff. I have sat in a blind four feet from the nest of a Redstart and have watched the actions of the young and parents; I have removed the Song Sparrows from the nest and had the parents feed them, perched on my finger, within less than a foot of my eyes; I have sat above the nest of the Duck Hawk and watched the daily life of the birds through powerful binoculars, and identified the birds that were brought in for the young. In every case I feel sure that I could have gathered much data on the amount of food administered to the youngsters had I given my attention to that phase of the subject. I think, also, that I



BLUEBIRDS WITH FOOD.

PHOTO BY A. R. CAHN

could have determined many of the more familiar insects with some certainty, though not with that degree of certainty an expert entomologist would were he examining the remains under a microscope. As it was, my attention was given to photographing the home life of the birds, and particularly of the parents, which brings me to the suggestion I would offer.

As long as we admit that field observations are not carried on with the idea of determining the specific food, I would suggest the use of the camera as an amount determinant,—

ROBIN FEEDING WITH FOOD MASSED IN THE BILL.
PHOTO BY A. B. CAHN

not that I would leave it to the camera to determine the amount of food administered; I would use the camera as a check upon the observations made. There are few of our common birds that will not eventually become reconciled to the presence of a camera either artfully concealed or without any attempt at concealment placed three or four feet from the nestlings. If the birds object to the presence of the observ-

er, the undesirable party may withdraw, and operate the camera by means of a thread, watching the birds through a field glass, and taking the picture at the psychological moment. Why not let the cyclopic eye of the camera verify the observations on the amount of food given the young? I admit that I have not tried this out, but I find in looking over my negatives that I have quite a number of photographs showing the parent with a definite amount of food in the bill, and I think that possibly very definite results might be obtained after a little experience, if the object were kept in mind. To illustrate my point I offer the photographs accompanying this note. Whether these will show as clearly in print as they do on lantern slides is very doubtful indeed, but the slides, when projected on a screen, show the food in great detail, so that it may be roughly identified.

A FLIGHT OF SHORE-BIRDS NEAR YOUNGSTOWN, OHIO.

BY JOHN P. YOUNG.

Near North Lima, Mahoning County, Ohio, there is a reservoir of about 400 acres area, made by damming the outlet of an old tamarack swamp. Many water birds stop at this lake in the migrations, and this article is written to tell of a heavy migration of shore-birds which occurred on August 10 and 11, 1914.

Our first visit to the lake after the return of the shore-birds was on July 27th, when we found Pectoral, Least, Semipalmated and Solitary Sandpipers, Wilson's Snipe, Great Blue Heron and Black Tern. On August 3, in addition to the above, we found the Semipalmated Plover, Yellow-legs, and Dowitcher.

On August 10 and 11 there were many shore-birds of the common kinds, and in addition we saw 4 Western Willets, 4 Dowitchers, one Western Sandpiper, one White-rumped Sandpiper, one Greater Yellow-legs, 2 Red-backed Sandpipers, also the Common Tern. On these days there were

many more shore-birds than there have been any day since, so far as we know from our rather frequent visits.

The Western Willets seen were the first we have recorded, and they were still there August 13th. The Dowitchers were not seen after the 11th.

The Western Sandpiper seemed to like the surroundings, as we saw it there for almost two weeks, presumably the same bird. It was found with the Least and Semipalmated Sandpipers, and in the opinion of Mr. Fordyce, and myself, was easily recognizable by the long bill. (This is the first record for the Western Sandpiper *Ereunetes mauri* for Ohio. The fact that the species occurs on the Atlantic coast during the southward migration, and is more or less regular in Missouri, Iowa, and Wisconsin, would make its occurrence in Ohio casual rather than accidental. Ed.)

The White-rumped Sandpiper was seen on August 10 and 11, and on October 29, and was quite tame. It would remain on the shore after the other birds had flown from the approaching observer. On one occasion I got within fifteen feet of it before it flushed. When it did fly it showed the white rump very plainly, but even when feeding it was rather easily differentiated from Pectorals and other sandpipers with which it was associated.

The appearance of the Red-backed Sandpipers and the Greater Yellow-legs was unusually early according to our records.

On August 13 the larger part of these birds had disappeared, and since that time no unusually large flights have been seen, though the Sanderling, Black-bellied Plover, and Golden Plover have come along in due time. Only one Sanderling has been seen, as our beaches are not very sandy. The Black-bellied Plover has been more numerous this year than before, and four or five individuals have been seen at frequent intervals.

. The following extract from the Journal of Mr. W. E. Clyde Todd, may throw some light upon this remarkable flight:

"Great Whale River, Hudson Bay, Aug. 7, 1914.—Heavy

storm of wind and rain from the west, the worst I have ever seen in this country. Worked on our birds all morning and in the afternoon went out along the beach to the mouth of the river, and thence northward to where the sandy beach gave way to a rocky ridge. The wind nearly blew me off my feet and birds were naturally very scarce."

We believe that the Wood Duck bred in the swamp at the lower end of this reservoir, as they were seen a number of times during August and September. On September 3 we saw 13 of them.

CORRECTIONS OF THE A. O. U. CHECKLIST IN REGARD TO BIRDS OF OHIO.

BY W. F. HENNINGER.

When the writer reviewed the last A. O. U. Checklist in the Wilson Bulletin, Sept., Dec., No. 1910, pp. 198–199 he made the statement that evidently neither the pages of the Wilson Bulletin nor any Ohio ornithologist had been consulted by the authors, who worked out the geographical ranges of the birds, as otherwise errors and omissions concerning this state would not be found so frequently in it. Some time later on a similar statement was made concerning another state in the columns of the Auk. Thereupon the writer corresponded with the editor of the "Auk" concerning Ohio birds and sent a complete list of the changes that should be made. A long time has since elapsed during which the writer expected the list to appear in the Auk as that was the impression he got from this correspondence, but as this was never done he thinks it is time that the correct records appear in print so that any one can change his checklist accordingly. They are herewith appended; and one glance will suffice to show how incomplete the checklist is without them as far as the status of many birds is concerned in Ohio and this no doubt will be true in regard to other states.

1. *Gavia immer*.—Does not breed in Ohio. (Jones, Wils. Bull., June, 1909, p. 68.)

2. *Stercorarius pomarinus.*—Casual in Ohio. (Jones, Cat. Ohio Birds, p. 26.)

3. *Sterna antillarum.*—Occurs in Ohio. (Jones, Cat. Ohio Birds, p. 33.)

4. *Oceanites oceanicus.*—Accidental in Ohio. (Henninger, Auk, 1907, p. 447.)

5. *Anhinga anhinga.*—Accidental in Ohio. (Jones, Wils. Bull., June, 1905, p. 64.)

6. *Anas platyrhynchus.*—Breeds in Ohio. (Wils. Bull., Dec. 1912, and other records.)

7. *Oidemia perspicillata.*—Accidental in Ohio. (Jones, Wils. Bull., Dec. 1908, p. 210.)

8. *Branta canadensis.*—Winters regularly in Southern Ohio. (Henninger, Wils. Bull., Sept. 1902, p. 80.)

9. *Branta bernicla glaucogastra.*—Rare in Ohio. (Jones and Fisher, Wils. Bull., Dec. 1908, p. 210.)

10. *Plegadis autumnalis.*—Casual north to Ohio. (Jones, Cat. Ohio Birds, p. 216.)

11. *Ixobrychus neoxenus.*—Rare in Ohio. (Jones, Wils. Bull., March, 1908, p. 50 and Auk, 1907, p. 338.)

12. *Herodias egretta.*—Casual north to Ohio. (Jones, Cat. Ohio Birds, p. 54.)

13. *Egretta candidissima.*—Casual in Ohio. (Jones, Cat. Ohio Birds, p. 55.)

14. *Florida caerulea.*—Wanders rather regularly to Ohio. (Henninger, Auk, Jan. 1910, p. 66, Dawson's Birds of Ohio, and Jones, Cat. Ohio Birds, p. 55.)

15. *Grus mexicana.*—Still breeds in Ohio. (Several records published and unpublished.)

16. *Coturnicops noveboracensis.*—Breeds in Ohio. (Jones, Cat. Ohio Birds.) Set of eggs taken by Dr. B. R. Bales of Circleville, Ohio, identified in 1909 at Smithsonian Institution. (Apologies due Dr. Bales.)

17. *Ionornis martinica.*—Irregularly north to Ohio in summer. (Jones, Cat. Ohio Birds, p. 61 and Dawson's Birds of Ohio.)

18. *Recurvirostra americana.*—Accidental in Ohio. (Jones, Cat. Ohio Birds, p. 64.)

19. *Himantopus mexicanus.*—Accidental in Ohio. (Jones, Cat. Ohio Birds, p. 64.)

20. *Gallinago delicata.*—Winters north locally to Ohio. (Jones, Cat. Ohio Birds, p. 67.)

21. *Macrorhamphus griseus scolopaceus.*—Rare migrant in Ohio. (Jones, Cat. O. B., p. 68.)

22. *Pisobia bairdi.*—Irregular migrant in Ohio. (Wheaton, Jones, Henninger and Wils. Bull., Sept. 1909, p. 126.)

23. *Catoptrophorus semipalmatus inornatus.*—Accidental in Ohio. (Jones, Wils. Bull., Dec. 1906, p. 131, and Wils. Bull., Sept 1909, p. 129.)

24. *Machetes pugnax.*—Strays to Ohio. (Wheaton, Jones, Cat. O. B., p. 317, and Dawson's Birds of Ohio, p. 527.)

25. *Elanoides forficatus.*—Accidentally north to Ohio. (Jones, Cat. O. B., p. 88, and others.)

26. *Astur atricapillus.*—Winters south to northern Ohio. (Dawson, Birds of Ohio.)

27. *Buteo borealis calurus.*—Accidental in Ohio. (Jones, Cat. O. B., p. 217, and Henninger, Wils. Bull., Sept. 1912, p. 156), the latter record since the publication of the checklist added for the sake of completeness.)

28. *Falco rusticolus.*—Accidental in Ohio. (Henninger, Wils. Bull., March, 1911, p. 58.) Added for the sake of completeness.

29. *Asio flammeus.*—Breeds in Ohio. (Wheaton and lately Dr. Bales.)

30. *Cryptoglaux acadica.*—Breeds in Ohio. (Dawson's Birds of Ohio.)

31. *Dryobates borealis.*—Casually to Central Ohio. (Jones, Cat. O. B., p. 218, and also Dawson's Birds of Ohio.)

32. *Antrostomus carolinensis.*—Does not occur in Ohio at all. The writer would like to see the Biological Survey furnish the proof (printed or otherwise) that the Chuck-wills-widow breeds in Ohio.

33. *Muscivora forficata.*—Accidental in Ohio. (Jones, Cat. O. B. and Wils. Bull., June, 1905, p. 64.)

34. *Empidonax traillii alnorum.*—All Ohio birds are *alnorum* and not *traillii* proper. (Jones, Wils. Bull., March, 1908, p. 51.)

35. *Xanthocephalus xanthocephalus.*—Casual in Ohio. (Jones, Cat. O. B., p. 218.)

36. *Pinicola enucleator leucura.*—Winters south to Ohio. (Jones, Cat. O. B., p. 136 and 137, and Wils. Bull., March, 1910, p. 35.)

37. *Calcarius pictus.*—Accidental in Ohio. (Wils. Bull., Sept. 1904, p. 85.)

38. *Passerherbulus lecontei.*—Accidental in Ohio. (Wils. Bull., March, 1907, p. 20.)

39. *Passerherbulus nelsoni.*—Accidental in Ohio. (Jones, Cat Ohio Birds, p. 145.)

40. *Melospiza georgiana.*—Breeds in Ohio. (Jones, Cat. Ohio Birds, p. 152.) Since then found breeding in Ohio, but record not published.

41. *Oporornis formosa*.—Add to breeding area, "from Southern and Eastern Ohio."

Since then Prof. Jones has found the White-throated Sparrow (*Zonotrichia albicollis*) breeding in Ohio, in two successive seasons, which should also be added to the check list.

NINETEEN YEARS OF BIRD MIGRATION AT OBERLIN, OHIO.

BY LYNDS JONES.

Migration studies have been carried on at Oberlin for upwards of twenty-five years, but there seem to be good reasons for limiting this record to the years since 1895. The data have not been presented before in this complete form because, in the opinion of the writer, the records were not sufficiently numerous to furnish a reliable table for the use of those who may wish to continue these studies.

For the first six years the territory covered lay almost wholly within Lorain county, extending from about five miles south of Oberlin to the shore of Lake Erie, and east and west from Oberlin about five miles, comprising a territory seventeen miles north and south by ten miles east and west. In this area, all of which was originally virgin forest, there are two river valleys extending in a northerly direction, extensive open fields, remnants of the original forest, brushy tangles where the dumps of abandoned sandstone quarries have been overgrown, and the lake shore with its considerable marshy areas at the mouths of streams. There are no elevations of importance. The two river valleys now have slender remnants of once considerable growth of white pine and red cedar, with islands of hemlock.

Since 1900 operations have been extended to include the Cedar Point sand pit with the adjacent extensive marshes and lake shore, and the narrow area bordering the road between Berlin Heights and the lake shore at Ceylon Junction, and also the mouth of Old Woman's Creek, the lower reaches of which are extensively marshy. Perhaps it would have been

better to separate the records from this distinctively different region from those of the definitely Oberlin region, but that could not be done without danger of serious mistakes. The Cedar Point sand pit records are mainly those of water birds, at least as they affect the appended tables. Some land birds tarry there later in the spring than they have been found in the Oberlin region.

I have no hesitation in saying that the percentage of error in these records must be small, because observations have been carried on almost every day during the season of migration, and for weeks before any migration began and for three weeks after it closed, and by a considerable body of trained observers. Questionable records have been eliminated.

Since the Crow, Robin, Bluebird, Meadowlark, Northern Flicker, Bronzed Grackle, and Mourning Dove regularly remain all winter in small numbers, the exact arrival of the first migrating individuals may not have been determined with certainty in every instance, but the migration of these species has been considered as begun with the advent of a considerable number of individuals who were singing and evidently individuals which had not remained in the region all winter.

The writer is well aware of the fact that averages based upon few records are of questionable value. Nearly all of the species which have been recorded as migrants are here given for the sake of completeness, with no thought that averages based on as few as nine records can be taken as true averages.

The median rather than the average date of arrival has been used in these tables, because the median has proved the more reliable in practice. Extremes in either earliest arrivals or latest records of species which pass north to breed do not affect the median as they do the average.

The species are arranged according to their average date of arrival as a matter of convenience for further studies of the migrations rather than according to the systematic arrangement of the A. O. U. Check-List. If this arrangement

be objected to on the ground that it is inconvenient to find any species because it is out of alignment with the Check-List, one would answer that the purpose of this paper is not to show the systematic relationships, but rather groupings according to times of migration. Even if it were possible, in any list arranged according to taxonomic relationships, to show those relationships accurately, which is avowedly impossible, the inconvenience of such a list when used in almost any sort of field work is considerable, so considerable that some other arrangement must often be devised. The only general utility arrangement is the alphabetical one.

Where the records are less than twelve in number it is likely that additional records covering a number of years will change the date here given as the median. In such cases, then, this paper claims only to give a basis upon which further work may be done. It is entirely possible that any of the dates given here as first seen may be moved forward by later records. They are of value only in showing what the range of variation may be, and also in showing that the birds are held back by a backward spring, and encouraged to move northward early in an early spring.

It will be noted that there is very marked disagreement in the dates of "Last seen." The irregularity is rather more marked among the water birds than among the land birds. The very late date of the Mallard in 1904 possibly indicates that the pair seen was breeding, although no nest was found. Color is lent to this supposition by the finding of a female Mallard in the marshes of Bay Point on the last day of June, 1914. The case of the Olive-backed Thrush (June 13, 1905) cannot be explained in this way. The single individual seen did not seem to be abnormal. There is a strong suspicion that the single Semipalmated Plover recorded on June 17, 1904, was a wounded bird. It flew without difficulty when approached too closely, but permitted an approach within five feet. The other June records are not particularly notable, since my records show a considerable number of early June "lists" for transient species.

The average variation between first arrivals (earliest and latest) for all of the species here listed is 21 days. The average variation of first arrivals of the water birds is 33 days, and of the land birds 20 days. The variation in the land birds which remain to breed is 20 days, of the transient species is 19 days. The land bird with the least variation is the Black-throated Green Warbler with 8 days, and the greatest variation is the Pipit, with a variation of 66 days. It is likely that the regular route of migration of the Pipit does not cross this region, since only occasional scattered flocks are found. The March 15, 1901, record is my own. There were two birds, one of which was secured for positive identification.

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Crow	19	Feb. 28;	Feb. 11, '98; Breeds		
Robin	19	Feb. 28;	Feb. 14, '14; Breeds		
Killdeer	19	Mar. 1;	Feb. 18, '12; Breeds		
Bluebird	19	Mar. 1;	Feb. 16, '11; Breeds		
Canada Goose	14	Mar. 6;	Feb. 19, '13	Apr. 1;	Apr. 15, '07
Meadowlark	18	Mar. 6;	Feb. 22, '13; Breeds		
Bronzed Grackle	19	Mar. 6;	Feb. 15, '12; Breeds		
Song Sparrow	19	Mar. 6;	Feb. 26, '06; Breeds		
Northern Flicker	17	Mar. 7;	Feb. 26, '06; Breeds		
Red-winged Blackbird	19	Mar. 8;	Feb. 26, '13; Breeds		
Black Duck	11	Mar. 14;	Feb. 22, '06	Apr. 4;	Apr. 15, '99
Baldpate	9	Mar. 14;	Mar. 9, '08	May 10;	May 27, '07
Redhead	8	Mar. 15;	Mar. 9, '08		Apr. 21, '03
Mourning Dove	14	Mar. 15;	Mar. 11, '07; Breeds		
Migrant Shrike	19	Mar. 15;	Mar. 2, '01; Breeds		
Canvas-back	7	Mar. 17;	Mar. 13, '03	Apr. 1;	Apr. 10, '05
Cowbird	19	Mar. 17;	Mar. 9. '10; Breeds		
Rusty Blackbird	19	Mar. 17;	Mar. 5, '10	May 8;	May 16, '08
Towhee	19	Mar. 17;	Mar. 6, '99; Breeds		
Pintail	10	Mar. 18;	Feb. 22, '09	Apr. 20;	Apr. 29, '07
Whistling Swan	5	Mar. 18;	Mar. 14, '04		Apr. 3, '99
Greater Scaup Duck	11	Mar. 19;	Mar. 2, '04	Apr. 19	
Field Sparrow	19	Mar. 19;	Mar. 12, '98; Breeds		
Mallard	12	Mar. 20;	Mar. 5, '06	Apr. 10;	Jun. 17, '04
Fox Sparrow	19	Mar. 20;	Mar. 5, '10	Apr. 21;	May 2, '07
Red-breasted Merganser	11	Mar. 21;	Mar. 15, '09	Apr. 30;	May 22, '09
Belted Kingfisher	19	Mar. 22;	Mar. 11, '10; Breeds		
Phoebe	19	Mar. 22;	Mar. 5, '05; Breeds		
Merganser	5	Mar. 23;	Feb. 22, '06		May 10, '12
Turkey Vulture	18	Mar. 24;	Mar. 11, '08; Breeds		
Vesper Sparrow	19	Mar. 25;	Mar. 16, '03; Breeds		
Wilson's Snipe	19	Mar. 27;	Mar. 15, '03	May 3;	May 22, '09
Chipping Sparrow	19	Mar. 30;	Mar. 21, '10; Breeds		
Shoveller	8	Mar. 31;	Mar. 18, '07		Apr. 21, '14
Lesser Scaup Duck	16	Mar. 31;	Mar. 9, '08; Breeds		

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Coot	14	Mar. 31;	Mar. 9, '08	May 5;	May 22, '09
Woodcock	18	Mar. 31;	Mar. 10, '02; Breeds		
Swamp Sparrow	18	Mar. 31;	Mar. '13, '08; Breeds		
Hermit Thrush	19	Apr. 2;	Mar. 21, '03	May 8;	May 26, '10
Pied-billed Grebe	18	Apr. 3;	Mar. 16, '07	May 6;	May 28, '04
Hooded Merganser	7	Apr. 3;	Mar. 11, '11	Apr. 20;	Apr. 30, '11
Great Blue Heron	18	Apr. 5;	Mar. 20, '97; Breeds		
Brown Thrasher	19	Apr. 5;	Mar. 22, '02; Breeds		
Pectoral Sandpiper	13	Apr. 6;	Mar. 30, '10	May 2;	May 11, '07
Yellow-bellied Sapsucker	19	Apr. 6;	Mar. 23, '10	May 9;	May 30, '11
Bufflehead	14	Apr. 8;	Mar. 15, '09	Apr. 26;	May 13, '07
Purple Martin	19	Apr. 9;	Mar. 25, '10; Breeds		
Bittern	12	Apr. 10;	Mar. 25, '10; Breeds		
Barn Swallow	19	Apr. 11;	Mar. 30, '07; Breeds		
Blue-winged Teal	12	Apr. 12;	Mar. 22, '13; Breeds		
Ruby-crowned Kinglet	19	Apr. 12;	Mar. 25, '05	May 12;	May 24, '10
Tree Swallow	18	Apr. 12;	Mar. 31, '10; Breeds		
Upland Plover	19	Apr. 13;	Mar. 22, '04; Breeds		
Bonaparte's Gull	14	Apr. 14;	Mar. 31, '13	May 20;	May 22, '11
Ruddy Duck	11	Apr. 14;	Mar. 26, '07	May 10;	May 13, '02
Horned Grebe	13	Apr. 16;	Mar. 24, '14	Apr. 29;	May 17, '08
Osprey	11	Apr. 16;	Apr. 5, '08; Breeds		
White-throated Sparrow	19	Apr. 16;	Mar. 21, '03	May 18;	May 22, '09
Louisiana Water-Thrush	19	Apr. 16;	Mar. 28, '04; Breeds		
Loon	10	Apr. 17;	Mar. 19, '07	May 8;	May 21, '01
Spotted Sandpiper	18	Apr. 18;	Apr. 9, '04; Breeds		
Savanna Sparrow	13	Apr. 18;	Mar. 30, '12	May 12;	May 25, '06
Wood Duck	6	Apr. 19;	Mar. 23, '04; Breeds		
Chimney Swift	19	Apr. 19;	Apr. 10, '10; Breeds		
Greater Yellow-legs	13	Apr. 20;	Apr. 12, '10	May 12	
Myrtle Warbler	19	Apr. 20;	Mar. 26, '08	May 19;	May 27, '07
Blue-gray Gnatcatcher	19	Apr. 20;	Mar. 29, '07; Breeds		
Bank Swallow	18	Apr. 22;	Apr. 6, '02; Breeds		
Green Heron	17	Apr. 23;	Apr. 6, '13; Breeds		
Yellow Warbler	19	Apr. 24;	Apr. 11, '08; Breeds		
Grasshopper Sparrow	19	Apr. 25;	Apr. 10, '10; Breeds		
House Wren	19	Apr. 25;	Apr. 17, '96; Breeds		
Rough-winged Swallow	17	Apr. 26;	Apr. 16, '02; Breeds		
Solitary Sandpiper	18	Apr. 27;	Apr. 18, '09	May 17;	May 25, '03
Bobolink	19	Apr. 27;	Apr. 16, '04; Breeds		
Warbling Vireo	19	Apr. 27;	Apr. 17, '96; Breeds		
Oven-bird	19	Apr. 27;	Apr. 22, '99; Breeds		
Catbird	19	Apr. 27;	Apr. 19, '13; Breeds		
Long-billed Marsh Wren	17	Apr. 27;	Apr. 16, '06; Breeds		
Olive-backed Thrush	19	Apr. 27;	Apr. 13, '08	May 25;	Jun. 13, '05
Cliff Swallow	19	Apr. 27;	Apr. 6, '03; Breeds		
Wood Thrush	19	Apr. 27;	Apr. 10, '04; Breeds		
Red-headed Woodpecker	19	Apr. 28;	Apr. 13, '10; Breeds		
Kingbird	19	Apr. 28;	Apr. 19, '14; Breeds		
Baltimore Oriole	19	Apr. 28;	Apr. 14, '05; Breeds		
Lark Sparrow	10	Apr. 28;			
Blue-headed Vireo	17	Apr. 28;	Apr. 17, '02	May 16;	May 22, '07
Black and White Warbler	19	Apr. 28;	Apr. 19, '14; Breeds		

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Blue-winged Warbler	19	Apr. 28;	Apr. 19, '14; Breeds		
Henslow's Sparrow	5	Apr. 29;	Apr. 22, '07; Breeds		
Black-thr. Green Warbler	19	Apr. 29;	Apr. 25, '96	May 22;	May 28, '07
Palm Warbler	16	Apr. 29;	Apr. 20, '08	May 16;	May 22, '09
Yellow-legs	12	Apr. 30;	Apr. 1, '12	May 13;	May 19, '03
Red-eyed Vireo	19	Apr. 30;	Apr. 27, '06; Breeds		
Maryland Yellow-throat	19	Apr. 30;	Apr. 19, '14; Breeds		
Sora	17	May 1;	Apr. 11, '08; Breeds		
Crested Flycatcher	19	May 1;	Apr. 24, '13; Breeds		
Scarlet Tanager	19	May 1;	Apr. 24, '13; Breeds		
Nashville Warbler	19	May 1;	Apr. 27, '14	May 21;	May 27, '01
Water-Thrush	16	May 1;	Apr. 24, '13	May 20;	May 25, '03
Redstart	19	May 1;	Apr. 25, '12; Breeds		
Veery	18	May 1;	Apr. 20, '99; Breeds		
Virginia Rail	19	May 2;	Apr. 14, '13; Breeds		
White-crowned Sparrow	19	May 2;	Apr. 21, '11	May 19;	May 22, '09
Rose-breasted Grosbeak	18	May 2;	Apr. 27, '96; Breeds		
Yellow-throated Vireo	19	May 2;	Apr. 20, '14; Breeds		
Orange-crowned Warbler	13	May 2;	Apr. 26, '09	May 14;	May 22, '09
Least Flycatcher	19	May 3;	Apr. 11, '03	May 24;	Jun. 3, '10
Florida Gallinule	9	May 4;	Apr. 20, '07; Breeds		
Orchard Oriole	18	May 4;	Apr. 29, '99; Breeds		
Cerulean Warbler	19	May 4;	Apr. 29, '99; Breeds		
Black-thr. Blue Warbler	19	May 4;	Apr. 27, '96	May 22;	May 29, '01
Chestnut-sided Warbler	17	May 4;	Apr. 30, '06	May 23;	May 27, '07
Whip-poor-will	16	May 5;	Apr. 19, '14; Breeds		
Indigo Bunting	19	May 5;	Apr. 26. '02; Breeds		
Northern Parula Warbler	13	May 5;	May 1, '00; Breeds		
Magnolia Warbler	18	May 5;	Apr. 28, '96	May 22;	May 28, '08
Short-billed Marsh Wren	7	May 5;	Apr. 30, '06; Breeds		
Pipit	17	May 6;	Mar. 15, '01	May 16;	May 26, '99
Pine Warbler	6	May 6;	Apr. 29, '98	May 13;	May 15, '14
Blackburnian Warbler	18	May 6;	Apr. 27, '05	May 22;	May 29, '09
Kirtland's Warbler	3	May 6;	May 2, '06		
Common Tern	14	May 7;	Apr. 29, '07; Breeds near		
Least Bittern	9	May 7;	Apr. 25, '04; Breeds		
King Rail	9	May 7;	May 4, '08; Breeds		
Wood Pewee	19	May 7;	May 2, '99; Breeds		
Yellow-breasted Chat	19	May 7;	May 1, '03; Breeds		
Gray-cheeked Thrush	14	May 7;	Apr. 29, '99	May 22;	May 29, '09
Philadelphia Vireo	8	May 8;	Apr. 29, '07	May 20;	May 27, '07
Golden-winged Warbler	8	May 8;	May 4, '02	May 14;	May 23, '05
Prothonotary Warbler	5	May 8;	Apr. 27, '13; Breeds		
Acadian Flycatcher	18	May 9;	May 3, '13; Breeds		
Dickcissel	7	May 9;	May 6, '96; Breeds		
Lincoln's Sparrow	12	May 9;	Apr. 14, '12	May 14;	May 23, '04
Hooded Warbler	12	May 9;	Apr. 22, '14; Breeds		
Yellow-billed Cuckoo	17	May 10;	May 6, '99; Breeds		
Kentucky Warbler	8	May 10;	Apr. 27, '04		
Tennessee Warbler	17	May 10;	May 1, '13	May 22;	May 30, '13
Bay-breasted Warbler	18	May 10;	May 4, '02	May 21;	May 28, '07
Canada Warbler	18	May 10;	Apr. 28, '96	May 22;	Jun. 3, '10
Cape May Warbler	12	May 10;	Apr. 27, '14	May 16;	May 27, '07

	Number Records	Median First Seen	Earliest Record	Median Last Seen	Latest Laggard
Connecticut Warbler	9	May 10;	May 3, '14	May 25;	May 29, '12
Black Tern	12	May 11;	May 2, '07; Breeds		
Black-billed Cuckoo	18	May 11;	May 4, '14; Breeds		
Ruby-thr. Hummingbird.	19	May 11;	May 2, '06; Breeds		
Prairie Warbler	9	May 11;	Apr. 29, '99	May 17;	May 20, '07
Mourning Warbler	15	May 11;	May 3, '14	May 25;	Jun. 2, '13
Least Sandpiper	10	May 12;	May 4, '14	May 16;	May 22, '10
Nighthawk	17	May 12;	Apr. 21, '09; Breeds		
Black-poll Warbler	18	May 12;	May 4, '06	May 24;	Jun. 3, '04
Semipalmated Plover	5	May 13;	May 11, '12	May 25;	Jun. 17, '04
Yellow-bellied Flycatcher	4	May 13;	May 9, '04	May 26;	Jun. 1, '14
Wilson's Warbler	14	May 13;	May 5, '00	May 25;	Jun. 3, '10
Red-backed Sandpiper	4	May 14;		May 17;	May 20, '10
Alder Flycatcher	19	May 14;	May 7, '02; Breeds		
Olive-sided Flycatcher	5	May 14;	Apr. 29, '13	May 27;	Jun. 1, '14
Ruddy Turnstone	10	May 18;	Mar. 31, '12	May 28;	Jun. 1, '14
Semipalmated Sandpiper.	5	May 20;	May 16, '03	May 23;	Jun. 1, '14

THE FOLLOWING SPECIES ARE WINTER RESIDENTS:

Brown Creeper	17	Apr. 28;	May 24, '10
Tree Sparrow	19	Apr. 29;	May 9, '09
Golden-crowned Kinglet	16	Apr. 30;	May 11, '09
Slate-colored Junco	18	May 1;	May 20, '07
Purple Finch	16	May 2;	May 28, '07
Winter Wren	18	May 8;	May 17, '98
Red-breasted Nuthatch	12	May 13;	May 28, '07
Pine Siskin	7	May 13;	May 20, '07
Horned Lark			Apr. 1, '99
Northern Shrike			Apr. 3, '99
Snowflake			Mar. 16, '08

The following species have been recorded, but the records are either too few or too irregular to be of any value for reference. They need particular attention. The species are arranged alphabetically.

Chickadee, Carolina
Cormorant, Double-crested
Crossbill, White-winged
Curlew, Hudsonian
Dowitcher
Duck, Ring-necked
Eagle, Golden
Gadwall
Golden-eye
Golden-eye, Barrow's
Goose, Blue
Goose, Snow
Goose, White-fronted
Goshawk
Grosbeak, Evening
Grosbeak, Pine
Hawk, Duck
Hawk, Rough-legged
Knot
Lark, Hoyt's Horned
Longspur, Lapland
Mockingbird
Murre, Brunnich's
Owl, Saw-whet

Owl, Short-eared
Owl, Snowy
Phalarope, Wilson's
Plover, Black-bellied
Plover, Golden
Plover, Piping
Sandpiper, Baird's
Sandpiper's, Stilt
Sparrow, Bachman's
Sparrow, Nelson's
Teal, Green-winged
Tern, Caspian
Vireo, White-eyed
Warbler, Worm-eating
Waxwing, Bohemian
Willet, Western
Wren, Bewick's

The Red-Crossbill is too irregular to be placed in any group. It is sometimes found every month in the year, but often absent.

The Herring and Ring-billed Gulls are present all the year, but do not breed in the vicinity, of course. The departure in spring of the birds which breed during the season cannot, therefore, be ascertained with any degree of accuracy.

The following species are regular residents: Alphabetically arranged.

Bob-white
Cardinal
Chickadee
Eagle, Bald
Goldfinch
Grouse, Ruffed (scarce)
Hawk, Cooper's
Hawk, Marsh
Hawk, Pigeon
Hawk, Red-shouldered
Hawk, Red-tailed
Hawk, Sharp-shinned
Hawk, Sparrow
Hawk, Broad-winged
Jay, Blue
Lark, Prairie Horned
Nuthatch, White-breasted
Owl, Barn
Owl, Barred
Owl, Great Horned
Owl, Long-eared
Owl, Screech
Titmouse, Tufted
Waxwing, Cedar
Woodpecker, Downy
Woodpecker, Hairy
Woodpecker, Red-bellied
Wren, Carolina

DISCOURAGING THE ENGLISH SPARROW.

BY THOMAS H. WHITNEY.

For nearly two years I have spent a good deal of leisure time on the almost hopeless task of ridding my home grounds of the English sparrow. Having tried nearly all the methods I could think of or read about that promised any practical results, in the hope my experience may be of some little value to others, I venture to describe it briefly.

The sparrow problem naturally divides itself into three parts: Destruction, Prevention of Increase, Protecting Food Supplied to Native Birds.

DESTRUCTION.

In the twenty months elapsed since I began work, I have killed 216 sparrows. Not a very large number, but ours is a small inland city which does not harbor any big flocks in the upper residence districts, the sparrows being rather evenly distributed a few to a place, as nesting and roosting are convenient. Those formerly resident in our grounds have long since been killed, and the great majority of those destroyed were new-comers in search of food or un-preempted home-sites. The total number killed is divided as follows:

Poisoned by strychnine-coated wheat.....	13
Shot with air-rifle.....	10
Shot with .22 cal. rifle.....	31
Caught in wire funnel trap.....	13
Caught in nest box trap.....	137
Total.....	216

There are practical difficulties in the use of poison, the principal one that of limiting the poisoned bait to sparrows only. I have a fresh supply of poisoned wheat made up for use this winter, but juncoes linger, and would probably be killed with the sparrows. Better a whole flock of sparrows than the unnecessary death of one native bird.

It is only occasionally that a bird can be killed or even in-

jured with an air-rifle, irrespective of marksmanship, as the shooting quality of the ordinary air-gun is very unreliable.

In my judgment the best gun for shooting sparrows in towns is the .22 calibre rifle, using shot cartridges, and to be equipped with a silencer; it is then practically noiseless, and almost certain to drop the bird if fired from a reasonable distance. When shot at irregularly and with this gun, sparrows do not become especially "gun-shy," as they certainly will if hunted in the ordinary way. Shooting, however, is usually against the ordinances of towns and cities, and apt to be dangerous, no matter how much care is exercised. Moreover, little impression can be made in this particular way, on the large numbers of sparrows always present in towns.

The ordinary funnel wire trap such as advertised extensively of late by various bird supply houses, I have tried out thoroughly, and found wanting. It will catch a few birds the first time or two of setting,— after that the sparrows will not enter, no matter how carefully the bait is placed, and irrespective of moving the trap to different locations. Where localities are over-run with large flocks of sparrows, a funnel trap will at first catch a good many, but the fact remains that they will not enter it after a few days, and further setting is useless.

It will be noted that more than 50% of the sparrows killed have been caught in a nest box trap. This kind of trap is fully described in the U. S. Farmer's Bulletin "The English Sparrow as a Pest." All the time I have been trying to shoot, poison, and trap sparrows by other means, this nest box trap has been steadily reducing their numbers, in all sorts of weather, and in all seasons of the year; it makes no difference when the bird arrives, the trap is ready and there is no escape. A thousand nest box traps put in commission throughout the country, would take their annual toll of tens of thousands of sparrows, and if placed with discretion will catch few native birds.

Of all the methods I know, the nest box trap is by far the best; not only from the standpoint of actual results in my

experience, but because it affords a really constant menace to the sparrows. Poisoning, shooting and trapping by other means are effective only when attended to by some one. The nest box trap, once put up, is always set, and if the receiving sack be fairly large, needs visiting only once or twice a season, though common humanity will direct attention to it at frequent intervals to prevent unnecessary cruelty.

PREVENTION OF INCREASE.

Sparrows are not allowed to roost anywhere on our premisis; at intervals of not more than a few days, we make the rounds of the house and grounds, and by poking with a fish pole in corners and above windows, and shaking vines and awnings, any birds present are driven off; if disturbed more than once, the same birds will not return. This undoubtedly discourages to a large extent any attempt to build in these places.

Boxes made of boards are put up only for wrens, the hole being made too small for sparrows. Any board box containing an ordinary sized hole, and especially if fitted with a perch or ledge, will certainly be occupied by sparrows and not a chance afforded the birds for which it was erected.

Several boxes in the von Berplesch style hung on our trees have been successfully occupied by wood-peckers, and are now in use by nuthatches and possibly chickadees as winter quarters. Early last spring the sparrows reconnoitered nearly all of these boxes, but made no attempt to occupy them and have not annoyed the rightful tenants. It may be too soon to be sure, but indications point strongly to the immunity of this style of nest boxes from occupation by the sparrows. If this is so, they certainly deserve a wide sale.

Our martin house has to be carefully watched, even for some time after arrival of the martins. At least one pair of sparrows will be allowed to rear broods without objection by the martins, and it has been necessary each spring to climb up several times and tear out nests. If the owner of a martin house is not persistently watchful, young sparrows will be

reared amidst the martins without his knowledge, as the parents develop astonishing cunning in concealing the presence of the family.

Once in a while some one writes that he does not let any sparrows nest in his yard. All praise to those who pursue this laudable ambition. "No sparrows nests" ought to be the slogan of every member of the Wilson Club, and every one else who takes an interest in our native birds.

PROTECTION OF FOOD SUPPLIES FOR NATIVE BIRDS.

I have tried out two of the best known winter feeding devices, one a self feeder attached to a tree, the other an expensive glass shelter with self feeding hopper for nuts, erected on an iron pole. The tree self-feeder was up only a short time till the sparrows began to frequent it, to the virtual exclusion of all others. Even when it contained food they did not want, the sparrows sat around anyway, and kept other birds at a distance. The glass shelter worked admirably last winter, and afforded the chickadees and a red breasted nuthatch plenty of dry food, and a sunny and shelterd place to rest. I thought the recommendation of its makers, that sparrows were afraid to enter, was justified; but alas, my fond expectations were dashed this fall by finding it the favorite resort of sparrows, who drove the returning chickadees away. Possibly it should not have been left standing all summer, and familiarity bred contempt. Any way, it has been taken in now, to be put up again later if there seems to be possibility of the sparrows forgetting it.

No attempt is now made to feed any of the hard billed or seed eating birds, as it seems to be impossible to prevent such food being monopolized by the sparrows. At present I am feeding sun-flower seeds in cloth pockets on the trunks of trees, and suet in mesh bags. Both these supplies are tacked or tied on the upright trunk, and all small nearby limbs or other projections that might serve as perches, are carefully cut away. Woodpeckers, nuthatches, chickadees and brown creepers have no difficulty in using these food supplies owing

to their ability to cling to the bark, the lack of which faculty prevents the sparrows from interfering.

In our part of Iowa, practically no seed eating birds are seen in towns during the winter. It is therefore not worth while to in effect invite the sparrows by putting out grain of any kind, especially as any such attempt is sure to be rendered valueless by the pugnacity and persistance of the sparrows, who will eat or waste all the food put out.

In conclusion, I believe I have demonstrated to my own satisfaction that sparrows can be successfully combated, by any one who can devote a small part of his spare time to the work. It requires energy and persistence, but it can be done.

In every locality, there needs to be a development of public sentiment to a point where many will be become interested enough to help. It is all well enough to talk and write about conserving our native birds, putting up nest boxes for them, etc., but in my humble opinion the crying need at present is an active campaign against the sparrow. If we will reduce the numbers of sparrows, native birds will certainly come in of themselves, and have a chance to survive the increase in towns and cities, which is denied them under present conditions.

Those of mature age can remember when the first visit of the snow birds was a welcome event of the early winter. When the lovely blue-birds, and vireos, and phoebes were about our yards in town all summer. How sad it is that all this is gone, perhaps forever, and we are compelled to listen to the incessant chirp of the alien sparrows, and witness their persecution of any hapless native birds that chance to stop even for a day, in their migration.

Lack of training and in doors occupation doubtless prevents many members of the Wilson Club, as well as myself, from following many lines of bird study we would enjoy; these must be left to others. But there is a line of work we can engage in, and one of the greatest importance, *The destruction of the English Sparrow.*

THE WILSON BULLETIN

A Quarterly Magazine Devoted to the Study of Birds. Official Organ of the Wilson Ornithological Club

Edited by **LYNDS JONES**

PUBLISHED BY THE WILSON ORNITHOLOGICAL CLUB, AT CHICAGO, ILL.

Price in the United States, Canada, and Mexico, One Dollar a year, 30 cents a number, post paid. Price in all countries in the International Postal Union, $1.25 a year, 40 cents a number. Subscriptions may be sent to Lynds Jones, Oberlin, Ohio, or to Mr. P. B. Coffin, 3232 Groveland Avenue, Chicago, Ill.

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EDITORIAL

The considerable delay of this number does not presage a like delay for the March number. Many things have conspired to bring about this delay, but they need not be enumerated. Suffice it to say that copy for the March issue is now ready.

Now that the annual meeting of the Wilson Ornithological Club has been sanctioned officially and is a settled event, as many members as possible should make definite plans to attend. It does not seem likely that the holiday season will prove to be a convenient time. President T. C. Stephens would be glad to have all members express their opinions in regard to the best time for the meeting. The editor favors the two days following Thanksgiving. What is your preference? Tell Stephens.

Notice is hereby given that membership dues are now payable. They should be sent to Treasurer P. B. Coffin, 3232 Groveland Avenue, Chicago, Ill. If members will heed this notice it will save the time of the Treasurer as well as save the expense of sending out notices.

FIELD NOTES

NESTING OF PROTHONOTARY WARBLER NEAR HURON, OHIO.

The prothonotary warbler was first seen by me, in Huron, on April 27, 1913, when one was found singing in an orchard, where it stayed until May 3. On May 4 one was found singing on the Cedar Point sandspit.

On May 22, 1914, one was found singing in town. It was seen nearly every day until June 7, when it disappeared. It appeared to be prospecting for a nest, as it would investigate holes in trees and even started carrying nesting material into a sprinkling can hanging on the back porch of a house. On May 31, besides the one in town, two others were heard singing at Rye Beach, about two miles west of Huron on Lake Erie. On June 14, two were found at Rye Beach in the willows and button bushes fringing the marsh. One was singing, but the other used only a scolding note. From their actions I suspected a nest, but was unable to find it. I searched on several occasions after that, but it was not until June 26 that I was successful. By watching the male bird it was found that he had a certain perch where he would sing at about fifteen minute intervals and that after singing he would occasionally drop down into the underbrush. Search near there finally flushed the female from the nest, which was situated in an old woodpecker hole in a stub of a button bush, about four feet from the ground. The nest was about four inches below the opening, was lined with grass and contained two quite heavily marked eggs.

The stub was part of a clump of bushes and in the spring was evidently surrounded by water, but at this time the water had dried up so as to leave the ground nearly dry. On June 28, I examined the nest again and found but one egg. Both birds were seen, but not close to the nest. On July 3 the nest was empty and the birds were not seen, but on July 9 I found the male singing about a hundred yards from the old nest. This was the last seen or heard of them. The eggs were probably taken by red squirrels, as there were numbers of these around.

This record extends the known breeding range of the species in Ohio north to Lake Erie, previous records being chiefly at St. Mary's reservoir and at Licking reservoir. H. G. MORSE.

BURROWING OWL BREEDING IN IOWA.

On September 20, 1914, seven members of the Sioux City Bird Club made a trip to a point about eight miles southeast of the city, to observe a small colony of Burrowing Owls. Three pairs of these owls have occupied holes, in which they have reared their young, in this pasture during the past summer. The owls have been coming to this locality for a number of years, during which time their habits have been observed closely by the boys on the farm. The holes occupied by the owls were probably originally dug by coyotes or other mammals. The birds have occupied the same holes from year to year. The holes are on the side of a hill — the northwest exposure. As we approached first one and then another started in flight, flying perhaps 300 yards before alighting again. The birds were very shy, and it was not possible to get close to them or to get a good view of them. The holes in which they have their nests are not deep, the boys say, they having dug out one or more of them. After entering the ground, the holes make a turn, and at the end, where the nest is located, is a cavity three or four feet in length. There is no evidence that any other animals except the owls occupy the holes. When the owls have young in the nests they are much bolder than at other times. When a dog belonging to the place would enter the holes he would be attacked by the old birds on the outside. At other times the owls would attack the dog while he was following the cattle through the pasture. The owls migrate for the winter, and will leave, according to their habit, about the first week in October. A. F. ALLEN.

NOTES FROM COLUMBIANA, OHIO.

An incomplete census of nesting birds within sight from the porches of our house shows nests (or sites of nests not plainly visible) of the following: One pair of Oven-birds, one of Red-eyed Vireos, one of Scarlet Tanagers, one of Wood Pewees (on a limb in a maple within thirty feet from a window!), one of Phœbes, one of Flickers, one of Bluebirds, one of House Wrens, one of Chipping Sparrows, one of Song Sparrows, one of Catbirds, and four of Robins. I am quite certain that continued searching would have revealed the nests of Indigo Buntings and Cardinal Grosbeaks very near at hand. This autumn we find several on the leafless limbs that we missed in the summer.

One afternoon this autumn a Red-tailed Hawk flew into a field near the woods, and capturing a small animal, flew into a leafless elm. With my glasses I could see the Hawk plainly, but not his

prey, which, however, could not have been much larger than a field mouse. The incident was of especial interest because three or four chickens were scratching in the grass within a few rods of where the Hawk struck for the mouse. The field was far enough from the house that it is not probable the Hawk left the chickens undisturbed out of fear, and the story lends strength to the argument that the Red-tailed Hawk, as a rule, attacks chickens only when other prey is not to be found. ALICE EDGERTON.

Columbiana, Ohio.

THE SUMMER TANAGER AT HILLSBORO, OHIO.

A pair of Summer Tanagers was first observed on May 4, 1913, flitting through the dazzling noonday sunlight and alighting on a nearby wire fence. The favorite places of these birds are the borders of the forest, where they may be seen flying about among the trees or perching on the telephone poles. The latter part of June the frequent visits of a pair to a particular spot revealed their secret. The nest was in a catalpa tree about twenty feet from the ground and two feet from the end of a limb, carefully concealed. The young left the nest July 1st.

KATIE M. ROADS.

FIELD NOTES FROM CAMBRIDGE, OHIO.

The list is unusual, only because the birds have all been found within a radius of less than a mile. Others seen, but not within this radius, are omitted. The selected area contains a little of almost every attraction for bird life: woodland, meadow, hedge, orchard, evergreen, thicket, stream and pond. Being unable to hunt the birds every day during the migratory season, I have not seen the entire list in one year. But, with the few exceptions, which I have marked rare, no doubt they might all be recorded the same year.

The Bobolinks, Stilt Sandpiper and Bonaparte Gull made their first appearance within this radius this last May. The Bachman Sparrow is very rare. Another bird student and I together saw the bird and heard the clear sweet song.

The Mockingbird, Evening Grosbeak, Pileated Woodpecker and Black-crowned Night Heron are accidentals; no other record being had from this locality, that I know of.

A decrease in the number of Hairy Woodpeckers has been noticeable for two or three years; while this season a decided increase in Blue Jays, Robins, Brown Thrashers, Wood Thrush, Cedar Waxwings, and Shrikes is marked, and never have we had such flocks of Juncos

and Tree Sparrows as assembled together during March and the first two weeks of April; the sweet tinkling voices filled the air with melody, and the telltale white feathers looked like hundreds of tiny pennants.

Only once before have I heard the song of the Fox Sparrow. This April a number of Songsters remained in the thicket for over a week. I cannot tell of that music, the sunset glory through the budding trees must go with it.

Song Sparrow
Lark Sparrow—Rare
Vesper Sparrow
Field Sparrow
Chipping Sparrow
Grasshopper Sparrow
Fox Sparrow
Tree Sparrow
Bachman Sparrow (one year only, but seen distinctly and heard singing)
White-throated Sparrow
White-crowned Sparrow
Goldfinch
Purple Finch—Rare
Rose-breasted Grosbeak
Evening Grosbeak (Feb. to May, 1911)
Towhee
Cardinal
Dickcissel—Rare
Indigo Bunting
Junco
Snowflake—Rare
Bronzed Grackle
Rusty Blackbird
Red-winged Blackbird
Cowbird
Meadowlark
Orchard Oriole
Baltimore Oriole
Scarlet Tanager
Summer Tanager
Crow
Blue Jay
Golden-crowned Kinglet
Ruby-crowned Kinglet
Blue-gray Gnatcatcher
Prairie Horned Lark
Chickadee
Tufted Titmouse
White-breasted Nuthatch
Red-breasted Nuthatch
Hermit Thrush
Wilson Thrush
Wood Thrush
Olive-backed Thrush
Gray-cheeked Thrush
Robin
Bluebird
Brown Creeper
Catbird
Brown Thrasher
Bewick Wren
Carolina Wren
Winter Wren—Rare
House Wren
Southern Mockingbird (Sept. and Oct. 1912 only)
Barn Swallow
Tree Swallow
Rough-winged Swallow—Rare
Bank Swallow—Rare
Purple Martin
Red-headed Woodpecker
Hairy Woodpecker
Downy Woodpecker
Red-bellied Woodpecker
Yellow-bellied Sapsucker
Flicker
Northern Pileated Woodpecker (once only)
King-bird
Phœbe
Wood Pewee
Crested Flycatcher
Traill Flycatcher
Least Flycatcher
Yellow-bellied Flycatcher
Acadian Flycatcher
Ruby-throated Humming-bird
Nighthawk
Whippoorwill
White-eyed Vireo
Red-eyed Vireo
Yellow-throated Vireo
Blue-headed Vireo—Rare
Warbling Vireo

Migrant Shrike
Chimney Swift
Blue-winged Warbler
Magnolia Warbler
Myrtle Warbler
Yellow Warbler
Black and White Warbler
Wilson Warbler
Mourning Warbler
Black-throated Green Warbler
Black-throated Blue Warbler
Hooded Warbler
Kentucky Warbler—Rare
Palm Warbler
Blackburnian Warbler
Bay-breasted Warbler
Chestnut-sided Warbler
Cerulean Warbler—Rare
Northern Parula Warbler—Rare
Nashville Warbler
Redstart
Yellow-breasted Chat
Water-Thrush
Louisiana Water-Thrush
Oven-bird
Northern Yellow-throat
Black-poll Warbler
Canada Warbler
Bohemian Waxwing—Rare
Cedar Waxwing
Yellow-billed Cuckoo
Black-billed Cuckoo
Kingfisher
Mourning Dove
Turkey Vulture
Cooper Hawk
Red-tailed Hawk
Pigeon Hawk
Sparrow Hawk
Screech Owl
Saw-whet Owl
Killdeer
Semipalmated Plover
Wilson Snipe
Pectoral Sandpiper
Spotted Sandpiper
Yellow-legs
Greater Yellow-legs
Solitary Sandpiper
American Woodcock
Blue-winged Teal Duck
Lesser Scaup Duck
Buffle-head Duck
Ruddy Duck
Baldpate Duck
Pied-billed Grebe
American Bittern
Sora Rail
Virginia Rail
Black-crowned Night Heron
Great Blue Heron
Bob-white
Bonaparte Gull (May, 1914)
Bobolink (May, 1914)
Stilt Sandpiper (May, 1914)

MRS. ROBERT T. SCOTT.

THE NEST-BOX TRAP FOR SPARROWS

I would like to call the attention of bird-lovers to the efficiency of the nest-box trap for English sparrows. This trap is fully illustrated and described in U. S. Bulletin "The English Sparrow as a Pest," but I have never found reference to its use in current bird literature.

Poisoned grain is liable to kill native birds. Wire traps must be baited with tempting food, and after two or three settings in the same place, sparrows will not enter at all. Shooting is effective to only a limited extent, and dangerous as well as unlawful in towns.

In contrast to these methods, the nest-box trap needs no bait whatever; every bird that enters disappears and will quickly die of suffocation if not removed and killed; it has the attraction of mystery, for none of those that enter are able to warn their companions of the danger; and it is in working order all the time, whether any one is at home or not.

The possible objection is that native birds of course can be caught, as well as sparrows, and will die unless soon removed. However, in my experience, only two birds other than sparrows have entered; both were wrens, and one was released unhurt; the other, a very young bird, was dead when found. To minimize this risk, the trap may be placed in a position frequented by sparrows and therefore apt to be avoided by other birds, and examined during the nest hunting season as often as possible; or the rack can be detached during that time.

My nest-box trap was built in April, 1913, and cost only a trifle. Since its erection, or a year and six months to date, it has caught 152 sparrows, with no attention except to remove and destroy the victims. Five or six live sparrows have been taken out at one time.

I often feel that the stern necessity for constant war against the sparrow is not properly kept in mind by all of us as bird lovers. Nest boxes and martin houses are worse than useless if not carefully guarded; feeding devices for winter birds are monopolized by sparrows sooner or later in the majority of cases. It is not enough that we occasionally use the dust-shot gun or air rifle; there must be active antagonism as nearly all the time as possible. It seems to me that the nest-box trap above referred to affords a constant means of destruction, and I urge its adoption by all those interested in the preservation of our native birds. T. H. W.

Iowa, October, 1914.

WHERE ARE THE CHICKADEES?

There are no Chickadees in the vicinity of Oberlin, Ohio. It would be interesting to know if they have gone farther south than is their custom in winter. Reports from more southern counties indicate that there is no lack of Chickadees there. The editor would be glad to receive reports on the Chickadee for this winter.

CORRESPONDENCE

A letter written to Dr. T. C. Stephens by our fellow member, Dr. P. A. Taverner, of the Victoria Memorial Museum, Ottawa, Canada, is of such general interest that with the permission of both gentlemen it is reproduced here. Dr. Taverner says:

I have just returned from a field trip to the South Shore of the Gulf of St. Lawrence, for the Zoölogical Division of the Geological Survey of Canada. We spent a month from May 21st on Miscou Island, N. B., and then went to Percé, across the Bay of Chaleurs; where we spent the remainder of the season to August 23d, with side trips to Gaspe and a flying visit to the Magdalen Islands.

Most of the work after Miscou was put on sea birds and Bonaventure Island the famous Gannet breeding place, three miles from Percé was a mine of interesting experiences and at Gaspe we made an economic study of the Cormorant—*Phalcrocorax auritus*—in relation to the salmon fisheries and hope that incidentally we have gone far to stop the killing of these birds.

We obtained a fine series of skins of nearly all the sea species inhabiting these shores, showing the various summer plumages of the various ages.

We are also able to correct the generally reported identification that gives *P. carbo* as the breeding Cormorant of this section. They are in fact all *auritus*, and one of the interesting problems will be in future to map out the summer distribution of these two species on the St. Lawrence coasts.

Besides this expedition we have two others in the field yet. Dr. R. M. Anderson is collecting and second in command with the Canadian Arctic Expedition under Stephanson. Our latest reports from him were written last December, but at the time of his writing he was in good health and his collecting progressing most favorably and with the promises of most satisfactory results. Fortunately he was not with the ill-fated "Karlark," that was crushed in the ice and whose crew we are still anxiously waiting to hear of through the U. S. Revenue Ship Bear.

Mr. Francis Harper of Cornell, constitutes the Zoölogical section of another expedition crossing from Lake Athabasca to Great Slave Lake. His last report was dated Athabasca Lake, June 8th, when about to make the final traverse. His results so far seemed most satisfactory and doubtless his final report on return will continue the promise of the earlier work.

Yours sincerely,

P. A. TAVERNER.

REVIEWS OF PUBLICATIONS

Handbook of Birds of the Western United States. Florence Merriam Bailey. Houghton, Mifflin Co. $3.50, net. Fourth Edition Revised.

This last edition of a well known and useful book is in the main a reprint of earlier editions, but with an extended "Addenda" of 58 pages, in which are indicated the changes in the nomenclature made in the last revisions of the Check-List of the A. O. U. committee, together with the addition of 56 forms and the elimination of 52. The last part of this "Addenda" is concerned with the "Birds of the Western United States in the Nomenclature of the 1910 Check-List," and with a list of "Books of Reference." The book was so complete for its purposes in the first edition that there has been little need for other changes than those given above.

L. J.

Alaskan Bird-Life as Depicted by Many Writers, edited by Ernest Ingersoll. Seven plates in colors and other illustrations. Published by the National Association of Audubon Societies. New York, 1914.

As stated in the introduction by T. Gilbert Pearson, the Secretary of this Association, the object of this volume of 72 pages is for free distribution among the people of Alaska for the purpose of educating them in regard to the real value of the birds and thus securing their coöperation in the conservation of Alaskan birds. This finds the hearty approval of the United States Bureau of Education. The birds of the several districts into which Alaska is divided topographically and climatically are treated on the group plan, and the volume closes with the extended treatment of the Tufted Puffin by William Leon Dawson, the Crested Auklet by Charles Haskins Townsend, the Emperor Goose by Edward W. Nelson, the Hudsonian Curlew by A. C. Bent, and the Alaskan Longspur by Edward W. Nelson. There are colored plates of these species, and of the Red Crossbill. It is a valuable volume. L. J.

A Peculiarity in the Growth of the Tail Feathers of the Giant Hornbill (*Rhinoplax vigil*). Alex. Wetmore, of the Biological Survey, U. S. Dept. Agr. No. 2059. From the Proceedings of the U. S. Nat. Mus. Vol. 47, pages 497-509. Published October 24, 1914.

It appears that one tail feather of the central pair of long feathers is fully developed before the young bird leaves the nest, and that in adult life the new feather of this pair grows out under the old one, the latter not being shed until the new one has become fully grown; also that the two central long feathers are shed in

alternate years. Certainly a remarkable condition of growth and molt. L. J.

Anatomical Notes on the Young of Phalacrocorax articeps georgianus. R. W. Shufeldt, M.D. Extract from A Report on the South Georgia Expedition. Science Bulletin of the Museum of the Brooklyn Institute of Arts and Sciences. Vol. 2, No. 4, pp. 95-102. November 5, 1914. Two plates.

This is a carefully prepared technical paper about a specimen twenty-four hours old. L. J.

The Gannetry at "The Stack," Orkney Islands. J. H. Gurney, F.Z.S. From "The Ibis" for October, 1914, pp. 631-634. One plate.

This short paper is a report of the impressions of the number of these birds found here after three visits in May and June, 1914, by the Duchess of Bedford. The Duchess concluded that the estimate of 8000 was too high, and that 5000 was nearer the fact.

L. J.

Are Gannets Destructive Birds? J. H. Gurney, F.Z.S. Reprinted from the Irish Naturalist, October, 1914, pp. 212-213.

The conclusion here reached is that while these birds do eat great quantities of herring and other fish they only serve to maintain the necessary balance, and therefore should not be considered a menace economically. L. J.

Geological Survey Work on Point Pelee, Ont. P. A. Taverner. Reprinted from The Ottawa Naturalist, Vol. XXVIII, November, 1914, pp. 97-105.

This is a brief report of work done here by the author and others, beginning on May 15, 1914, with references to work done here previously. It is encouraging to note that the Cardinals and Mockingbirds are holding their own here, if not increasing, but discouraging to find that the Carolina Wrens were all but exterminated. Indications point to their increase again, however. It is also interesting to note the reappearance of the Dickcissel and the taking of a specimen of Cory's Bittern (*Ixobrychus neoxenus*). To the record of the taking of the Prothonotary Warbler (*Protonotaria citrea*) noted on page 100, should be added the writer's record for August 22, 1911, on Pelee Island. The paper contains records of certain trees and other plants, and other animals than birds.

L. J.

See front of Dec. no. for title page & index

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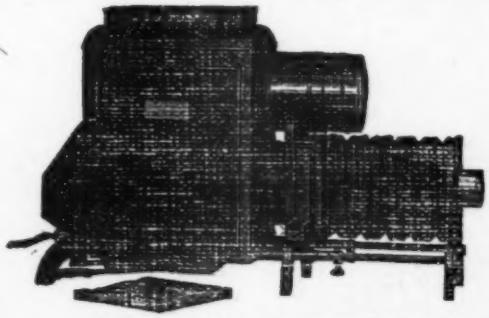

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